

Technical Guide

Plasma Training Course

GP6DU, GPH6DU, and GPH7D (Onyx) Chassis

Troubleshooting



Panasonic Services Company
National Training

Prepared by
César Perdomo & Jean Magloire
Panasonic Services Company
National Training

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Introduction

This technical guide was prepared with the following objectives in mind:

- Provide the servicer with a brief overview of the concepts of operation for new circuits employed in this line of Plasma models.
- Provide drawings with emphasis on signal path to simplify the task of signal tracing and to locate the cause of a defect.
- Furnish troubleshooting procedures that contribute to a speedy repair of the product.
- Provide examples of typical problems that may have occurred in similar types of circuits.

Model Line Up



TH-37PD25U

37-inch 480p Version
 2 Component Video Inputs
 3 Composite Video Inputs
 3 S-Video Inputs
 1 HDMI / HDCP input
 1 Tuner _NTSC/ATSC/QAM (SDTV and
 HDTV broadcasts) (Cable CARD Ready)
 1 Tuner_ NTSC (Standard analog
 broadcasts for PIP)
 PC / SD Card Inputs
 Integrated Speaker System
 Surround Sound



TH-37PX25U

37-inch 480p/1080i Version (720p PC Only)
 2 Component Video Inputs
 3 Composite Video Inputs
 3 S-Video Inputs
 1 HDMI / HDCP input
 1 Tuner _NTSC/ATSC/QAM (SDTV and
 HDTV broadcasts) (Cable CARD Ready)
 1 Tuner_ NTSC (Standard analog broadcasts
 for PIP)
 PC / SD Card Inputs
 Integrated Speaker System
 Surround Sound



TH-42PD25U

42-inch EDTV Version
 2 Component Video Inputs
 3 Composite Video Inputs
 3 S-Video Inputs
 1 HDMI / HDCP input
 1 Tuner _NTSC/ATSC/QAM (SDTV and
 HDTV broadcasts) (Cable CARD Ready)
 1 Tuner_ NTSC (Standard analog
 broadcasts for PIP)
 PC / SD Card Inputs
 Integrated Speaker System
 Surround Sound



TH-42PX25U

42-inch 480p/1080i Version (720P PC Only)
 2 Component Video Inputs
 3 Composite Video Inputs
 3 S-Video Inputs
 1 HDMI / HDCP input
 1 Tuner _NTSC/ATSC/QAM (SDTV and
 HDTV broadcasts) (Cable CARD Ready)
 1 Tuner_ NTSC (Standard analog broadcasts
 for PIP)
 PC / SD Card Inputs
 Integrated Speaker System
 Surround Sound



TH-42XVS30UP

42-inch HD Version (720p via PC input only)

Digital Multimedia Receiver

2 Component Video Inputs

3 Composite Video Inputs

3 S-Video Inputs

1 HDMI / HDCP input

1 Tuner _NTSC/ATSC/QAM (SDTV and HDTV broadcasts) (Cable CARD Ready)

1 Tuner_ NTSC (Standard analog broadcasts for PIP)

PC / SD Card Inputs

Integrated Speaker System

Surround Sound



TH-50XVS30UP

50-inch HD Version (720p via PC input only)

Digital Multimedia Receiver

2 Component Video Inputs

3 Composite Video Inputs

3 S-Video Inputs

1 HDMI / HDCP input

1 Tuner _NTSC/ATSC/QAM (SDTV and HDTV broadcasts) (Cable CARD Ready)

1 Tuner_ NTSC (Standard analog broadcasts for PIP)

PC / SD Card Inputs

Integrated Speaker System

Surround Sound



TH-65XVS30UP

65-inch HD Version (720p via PC input only)

2 Component Video Inputs

3 Composite Video Inputs

3 S-Video Inputs

1 HDMI / HDCP input

1 Tuner _NTSC/ATSC/QAM (SDTV and HDTV broadcasts) (Cable CARD Ready)

1 Tuner_ NTSC (Standard analog broadcasts for PIP)

PC / SD Card Inputs

Integrated Speaker System

Surround Sound

New Features and Circuit Improvements

Dedicated media receiver

- Built-In NTSC Tuner
- Built-In ATSC Tuner
- Built-In QAM Tuner
- Cable-Card Ready
- BBE VIVA HD 3D
- AI Sound Control
- 3 A/V Input (Composite or S-Video)
- 2 Component Video Inputs
- PC Input (VGA/SVGA/XGA/UXGA)
- Digital Audio Out
- On/Off Timers
- SD Card Slot with Photo Viewer
- HDMI Input
- 2 Tuners (PIP with Split Screen) Handle ATSC/QAM/Cable-CARD tuning, source A/V switching and SD/PC Card connectivity
- Approximately 21 feet cable connects receiver to Plasma set. It doesn't need to be close to components

Long Life Expectancy

- Up to 60,000 hours comparable to CRT
- Over 25 years. (Based on approximately 6 hours a day, 365 days per year equals 27.4 years)

Burn-In Resistance

- Reformulated phosphors utilized
- Aging occurs much more slowly

8.58 Billion Colors via Improved Super Real Gamma

- 2,048 shades of gradations
- 8.58 billion colors
- Color reproduction more faithful to true life

Digital Access Pack (Digital Tuning System)

- Integrated ATSC and QAM tuners
- NTSC tuner
- Cable Card provides subscription cable channels without box
- No external tuners needed for HD, cable, digital cable or HD cable
- Customer gets true plug and play HD/ Cable TV

Color Purity Optimizer

- Works in 3 dimensions brightness, color and hue
- Precision control for vibrant colors
- Vibrant colors will stand out better while skin tones will remain natural

Motion Pattern Noise Reduction

- New technology detects patterns that generate noise
- Circuit employs countermeasures to maximize image quality
- Image will be smoother and more natural with all sources.

New Sub-Pixel Controller

- Handles contour correction at sub-pixel level
- Greatly improves control precision of image
- Diagonal lines will appear sharp and straight (Compare diagonal lines on Onyx XVS sets to other).

Models Comparison Tables

Model	Chassis	Native Resolution (Number of pixels)	Cable CARD Ready¹ cable service without the box	Shades of Gradation	Contrast Ratio
TH-50PX25U/P	GPH6DU	1366x768	Yes	1536	Up to 3000:1
TH-42PX25U/P	GPH6DU	1024x768	Yes	1536	Up to 3000:1
TH-37PX25U/P	GPH6DU	1024x720	Yes	1536	Up to 3000:1
TH-42PD25U/P	GP6DU	852x480	Yes	1536	Up to 4000:1
TH-37PD25U/P	GP6DU	852x480	Yes	1536	Up to 4000:1
TH-42XVS30	GPH7D Onyx	1024x768	Yes	1536	Up to 3000:1
TH-50XVS30	GPH7D Onyx	1366x768	Yes	1536	Up to 3000:1
TH-65XVS30	GPH7D Onyx	1366x768	Yes	1536	Up to 3000:1
TH-50PHW7BX	GPH7D2	1366x768	Yes	1536	Up to 3000:1

Table 1

Boards Layout

TH-42PD25U Boards Layout (GP6DU)

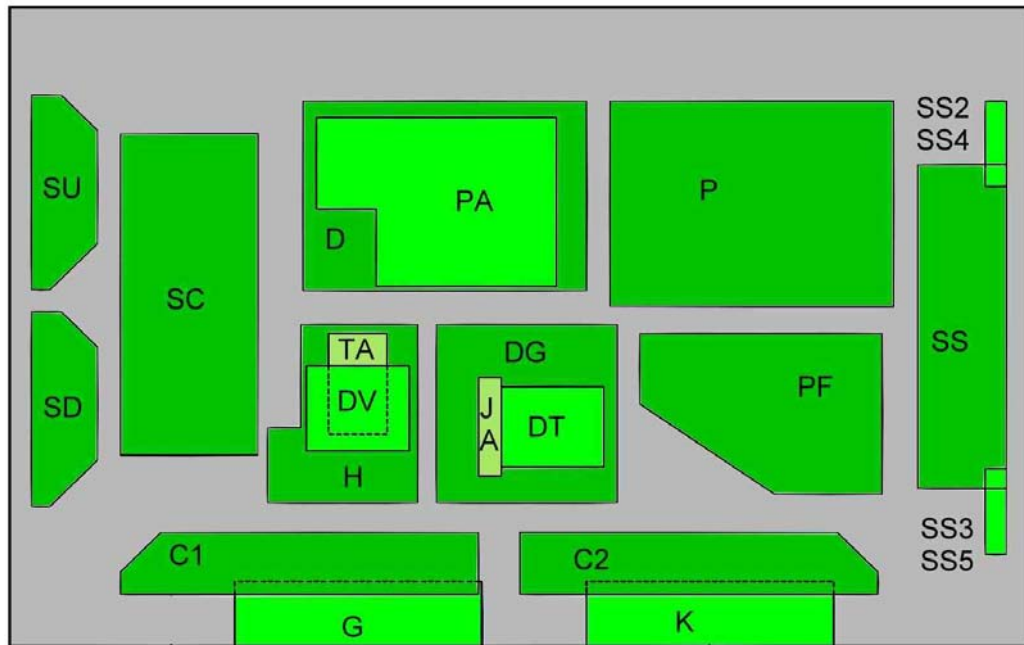


Figure 1 - TH-42PD25U boards layout

TH-42PX25U Boards Layout (GPH6DU)

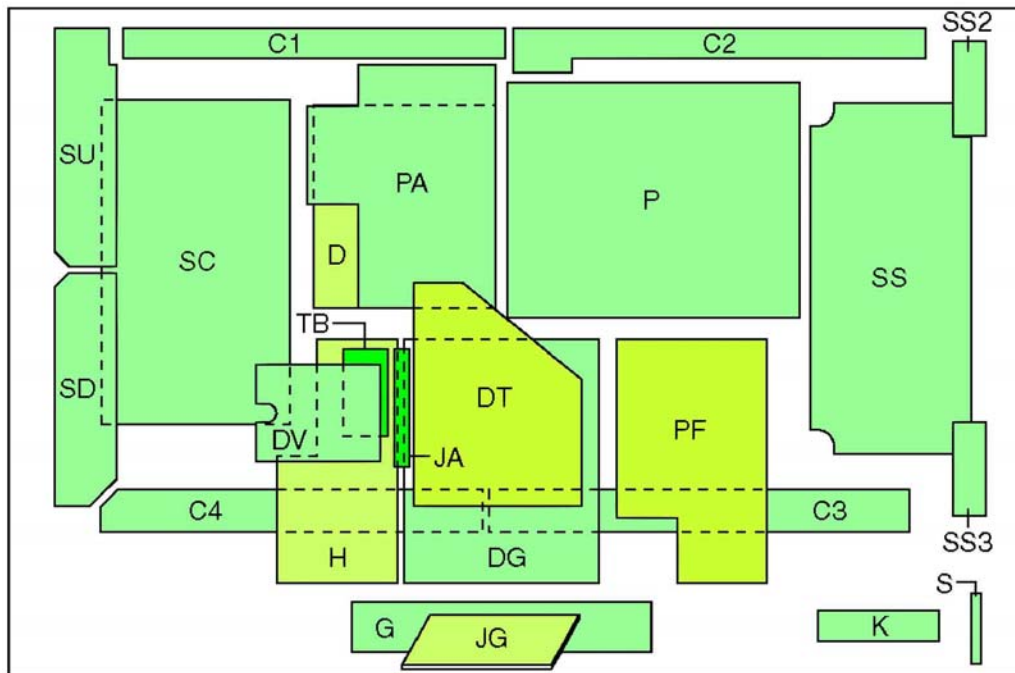


Figure 2 - TH-42PX25U boards layout

TH-50PX25U Boards Layout (GPH6DU)

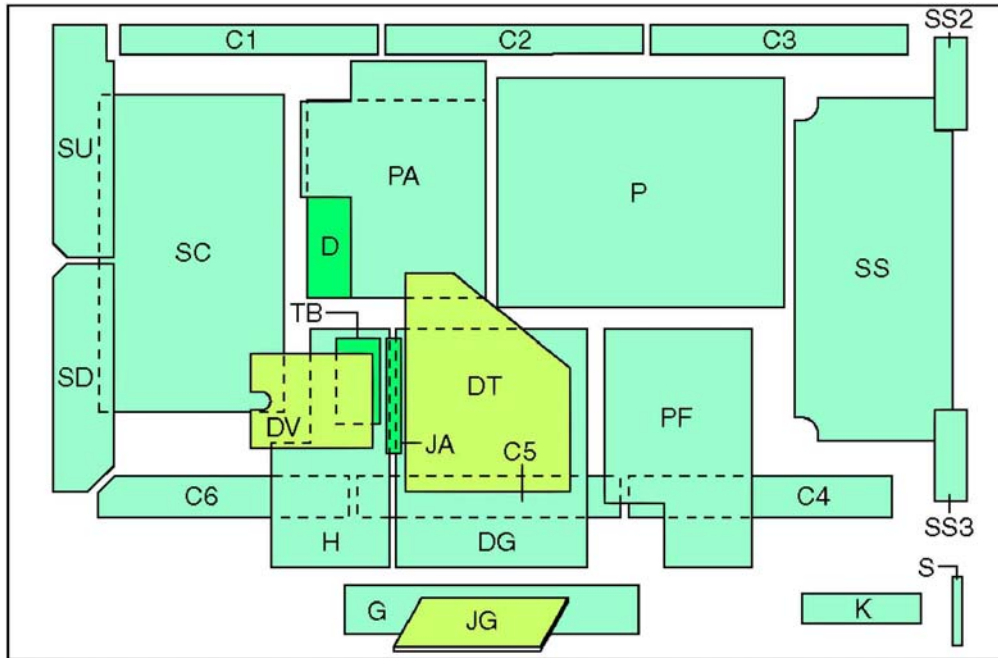


Figure 3 - TH-50PX25U boards layout

TH-42XVS30 (Onyx) Boards Layout (GPH7D)

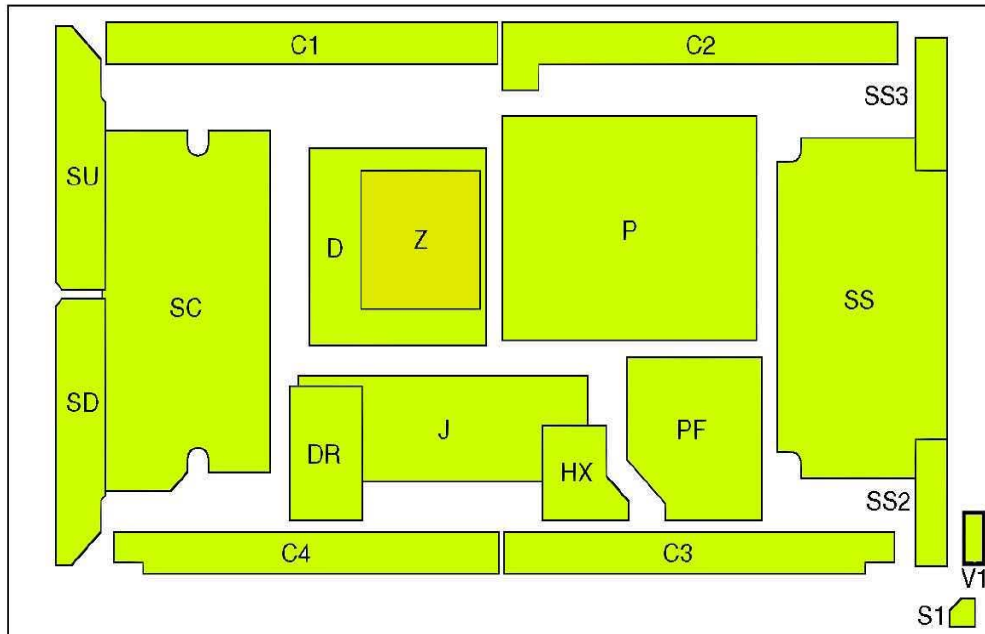


Figure 4 - TH-42XVS30 Board Layout

TH-50XVS30 (Onyx) Boards Layout (GPH7D)

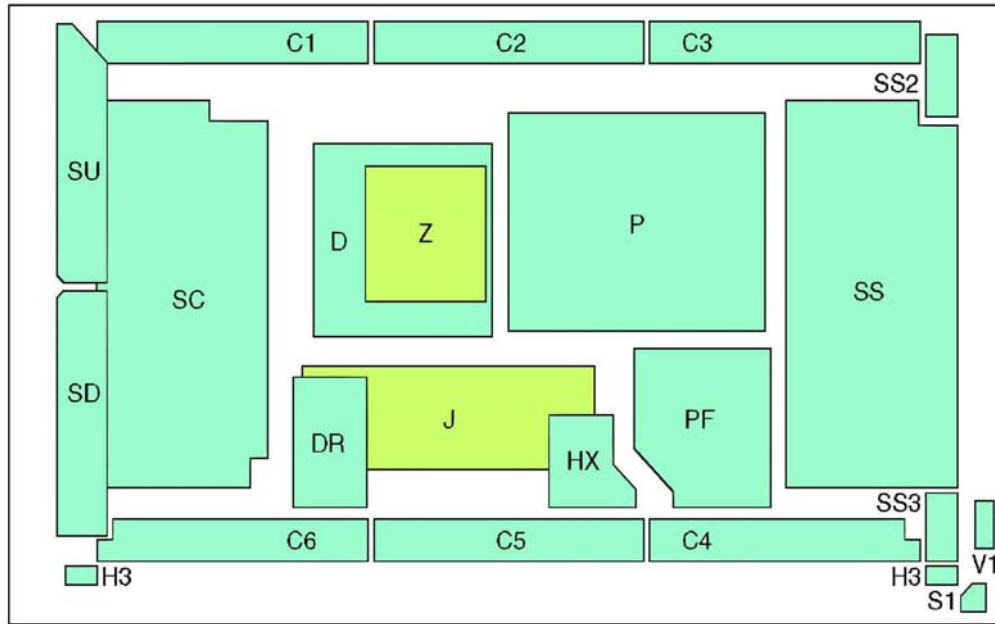


Figure 5 - TH50XVS30 Board Layout

TH-65XVS30 (Onyx) Boards Layout (GPH7D)

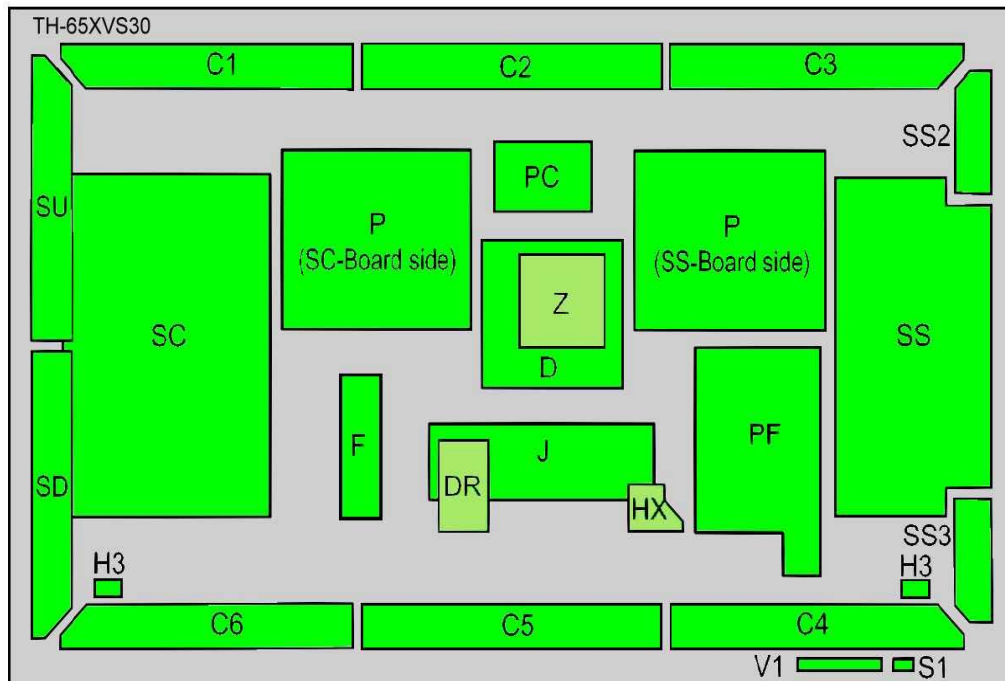


Figure 6 - TH65XVS30 Board Layout

Video Block

GP6DU and GPH6DU Chassis

The GPH6DU, and the GP6DU series plasma panels incorporate two tuners. The main Digital Tuning System is used for primary picture operation. It provides component and composite video and audio output signals from its ATSC, NTSC, and QAM tuners. An additional NTSC sub-tuner provides a video output signal (no audio) for use with multi-picture functions.

The composite output of the main tuner is connected to the NTSC input switch IC on the H Board. The component output is connected to the main switch IC on the H board. The unit also contains three video inputs that are also connected to the input switch IC. The input switch IC selects one video signal from 5 video inputs for main picture operation and another for sub-picture operation. Selection is controlled by the MPU via the I²C Bus (SDA & SCL). These two outputs are then connected to the main switch IC.

The panel also contains two component inputs and an HDMI input. The inputs are connected to the main switch. The HDMI input connector on the DG Board, accepts signals to HDMI receiver where it undergoes serial to parallel conversion. The output of the receiver is then converted to “Y, Pb, Pr” component signals before being applied to the Main switch. The MPU selects one of the 8 inputs for main picture operation and another for sub-picture operation.

On the DG- Board, the global core IC (GC2M) converts the composite video signal of the main picture to RGB video signals. The GC2S IC processes the sub-picture information and combines it with the main picture. It performs interlace to progressive scan conversion. The Global core IC also converts the horizontal frequency of all NTSC input-signals to 31.468KHz. The output of the GC2M IC is RGB, which is applied to an RGB amplifier.

IC001 is the TV Main CPU. It generates the On-Screen Display (OSD) RGB signals, which are applied to the RGB amplifier stage. A switching circuit combines the two sets of RGB signals for display on the screen. All NTSC, Component, and RGB picture adjustments such as picture, tint, color, brightness, etc. are performed inside this IC.

The RGB/PC select circuit switches between PC and all other inputs. The output of the switch is routed to the D-Board.

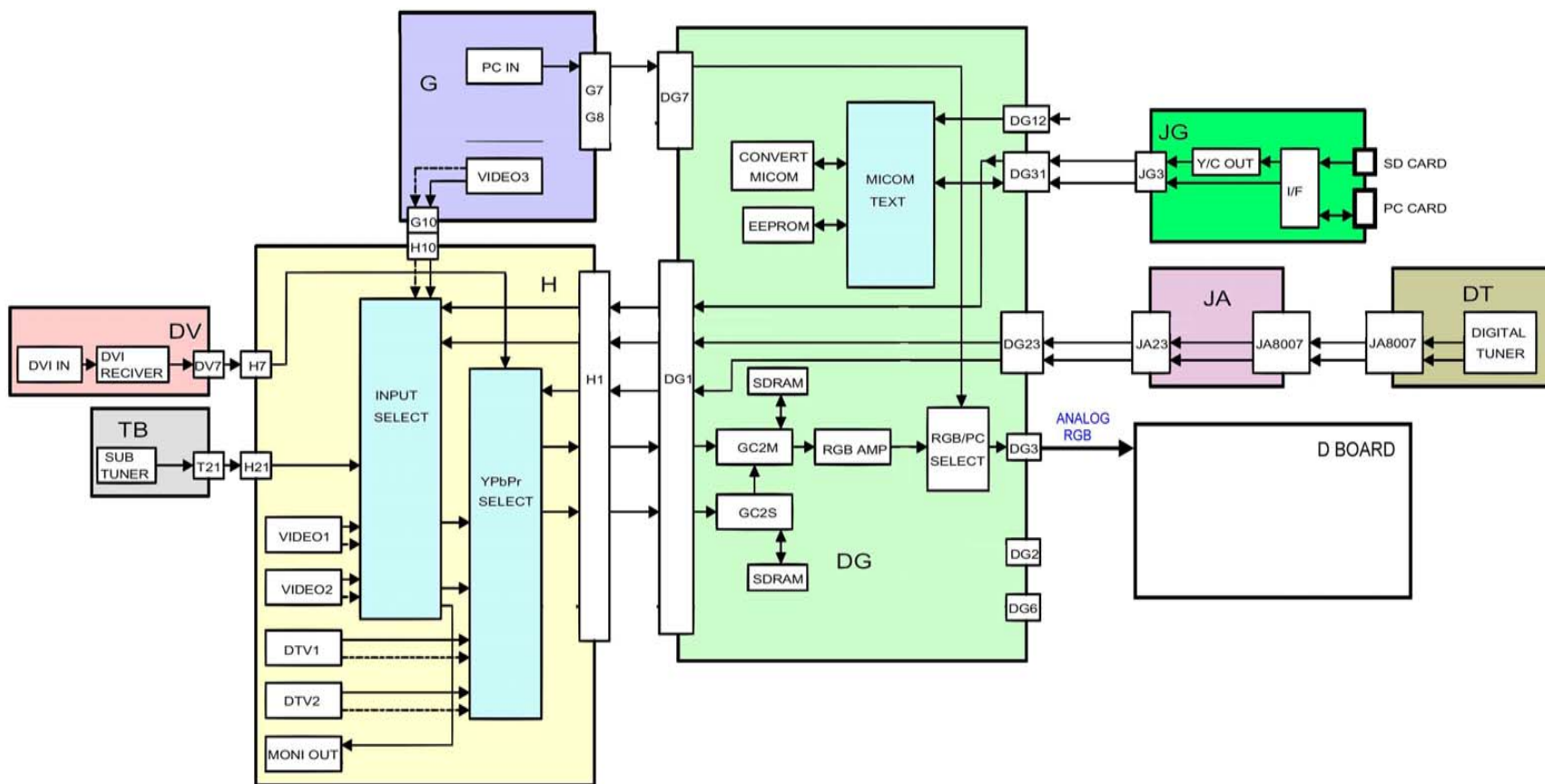


Figure 7 - Video Block Diagram

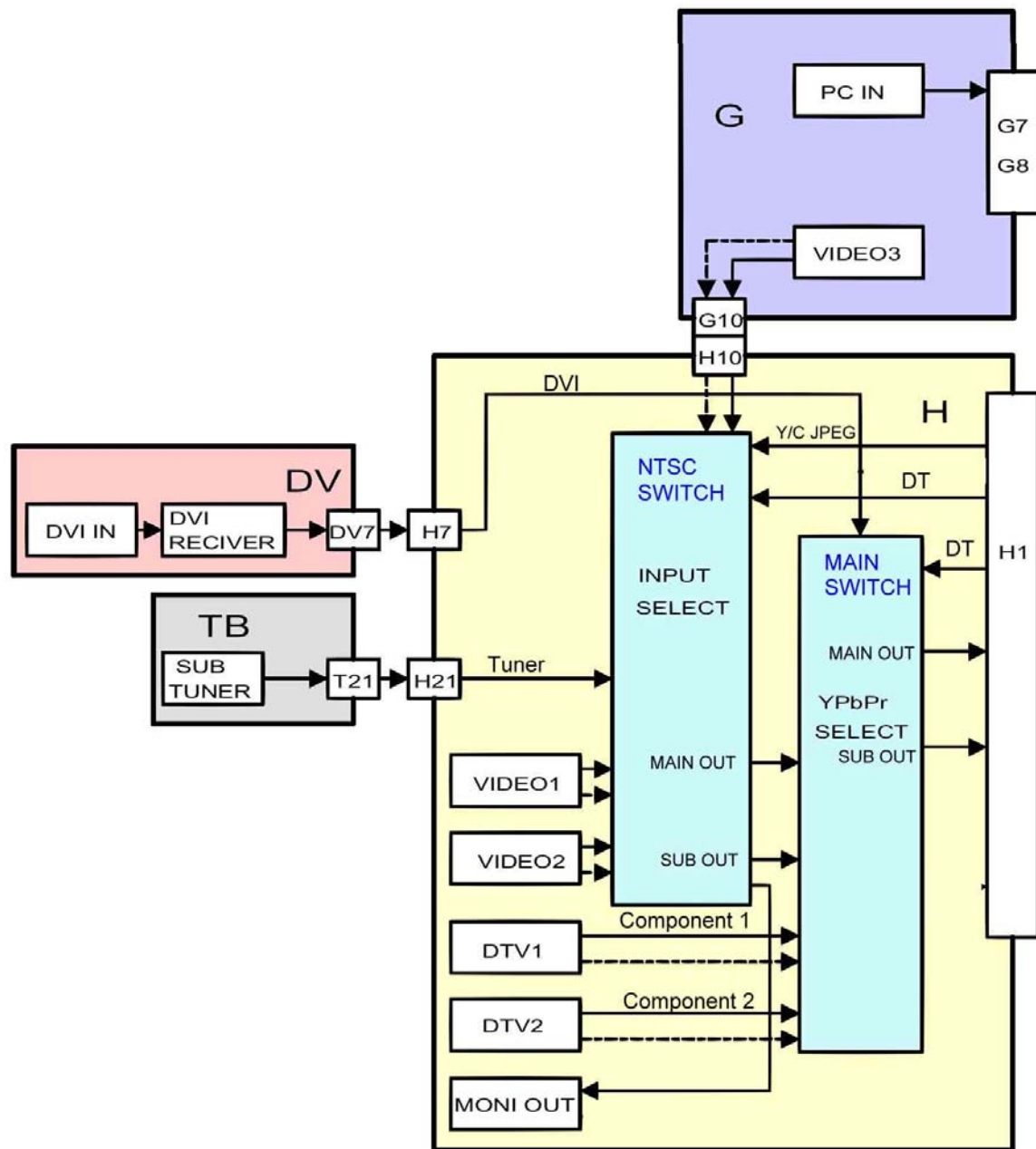


Figure 8 - H Board Block Diagram

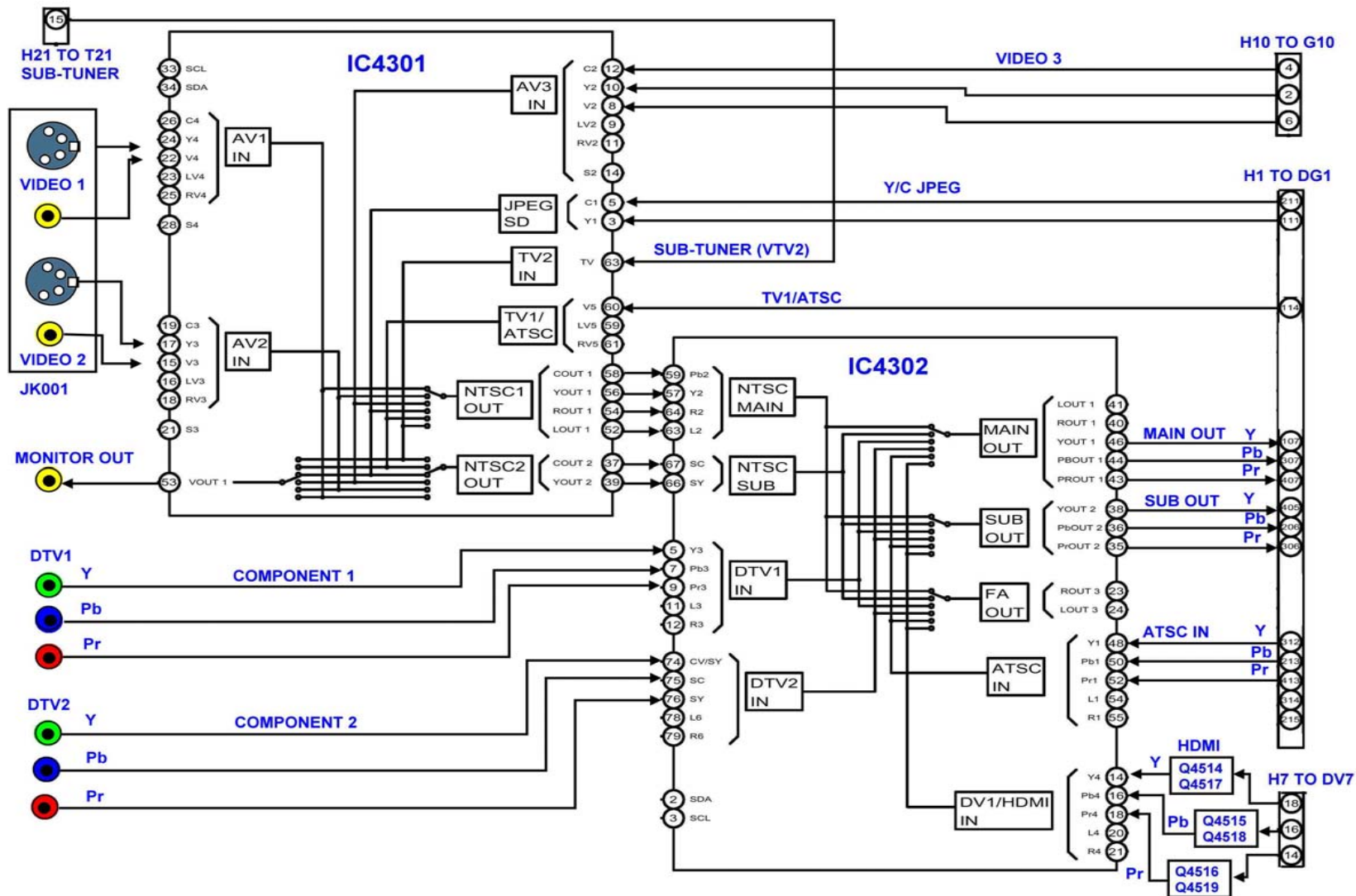


Figure 9 - H Board Block Diagram

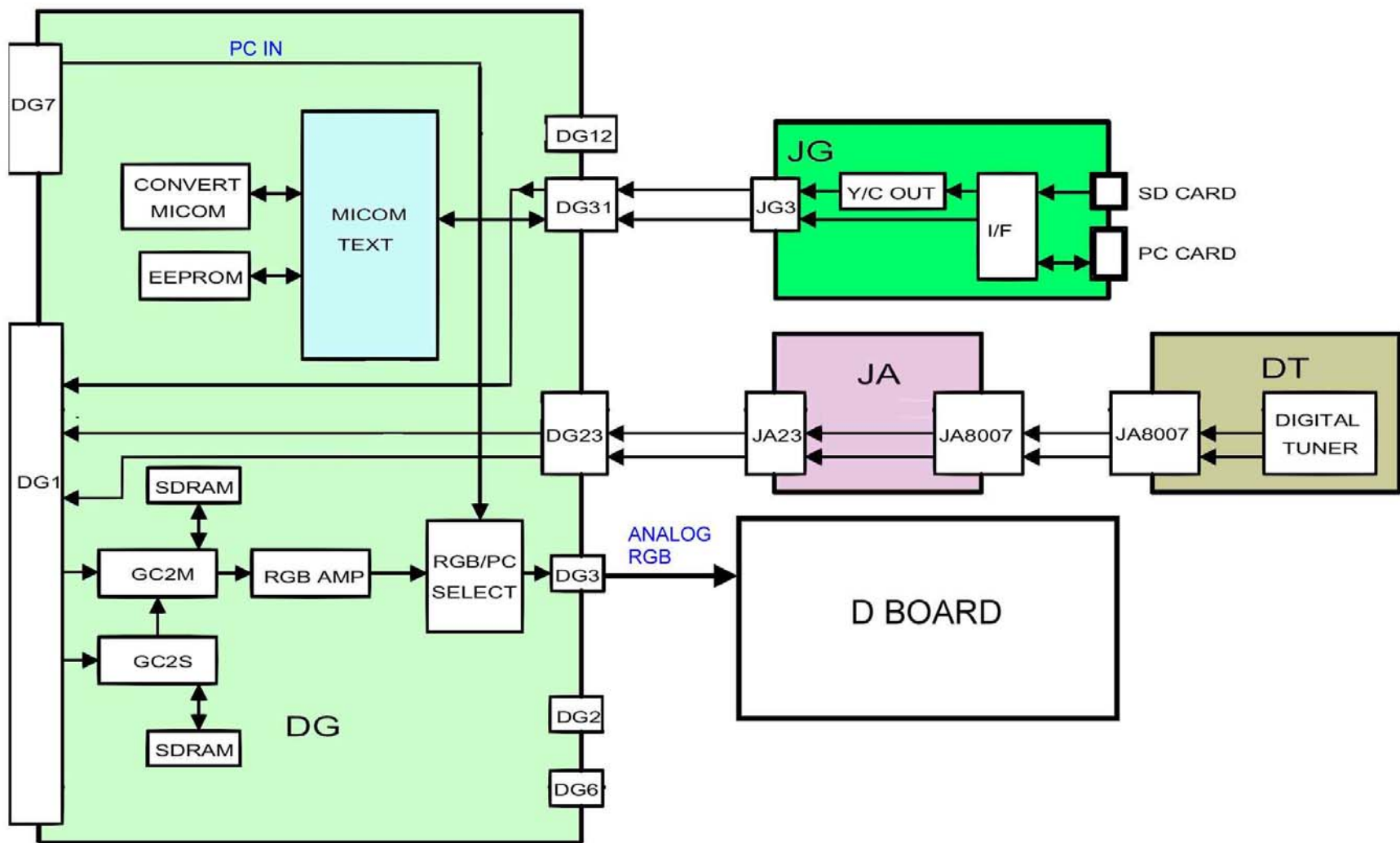


Figure 10 - DG Board Block Diagram

GPH6DU Chassis HDMI Signal Process

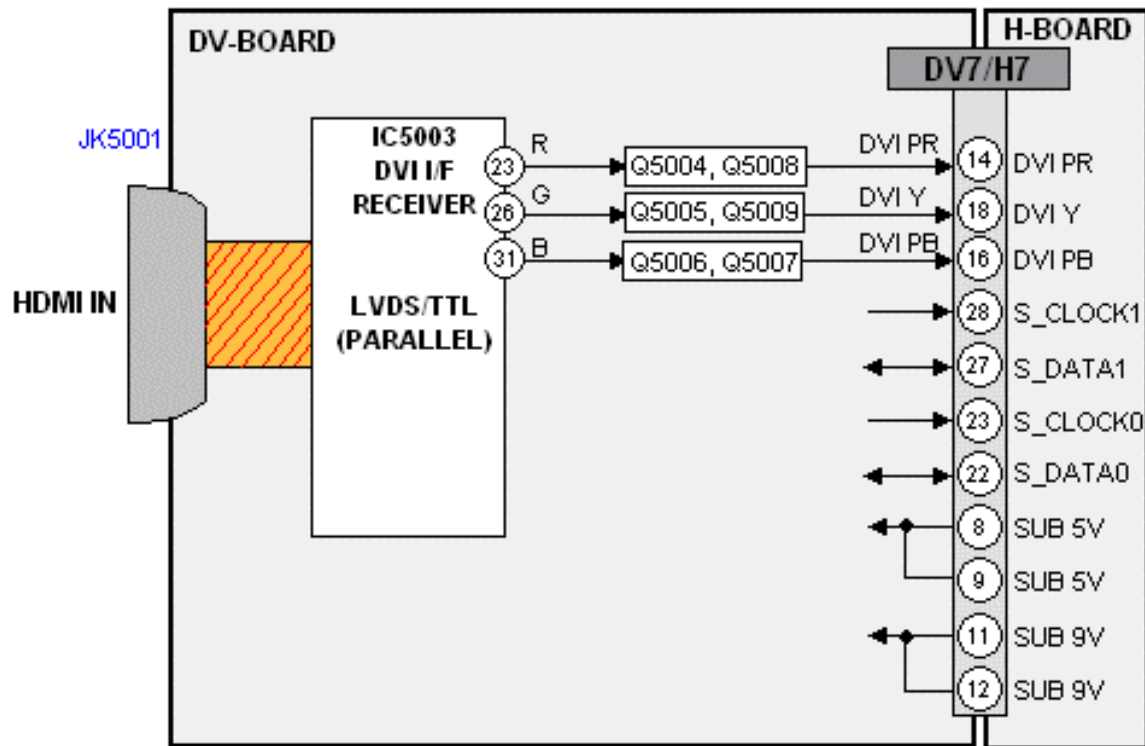


Figure 11 - HDMI Signal Process

The HDMI (High Definition Multimedia Interface) input is a port designed to receive digital video and audio from a set-top box, a DVD player, or other digital devices. IC5003 of the DV board converts the digital video to parallel analog Y, Pb, and Pr video signals. The signals are output from IC5003 to a set of video amplifiers. After amplification, the signals are applied to the A-Board via pins 14, 16, and 18 of the connector DV7/DG51.

Note: To connect an external device that has a DVI output to a plasma panel model that has an HDMI input only, use an adaptor cable and connect the Audio signal to the Audio jacks located below the HDMI input. An HDMI-DVI conversion cable (TY-SCH03DH) is available from Panasonic parts department.

GPH6DU Chassis Photo Viewer Signal Process

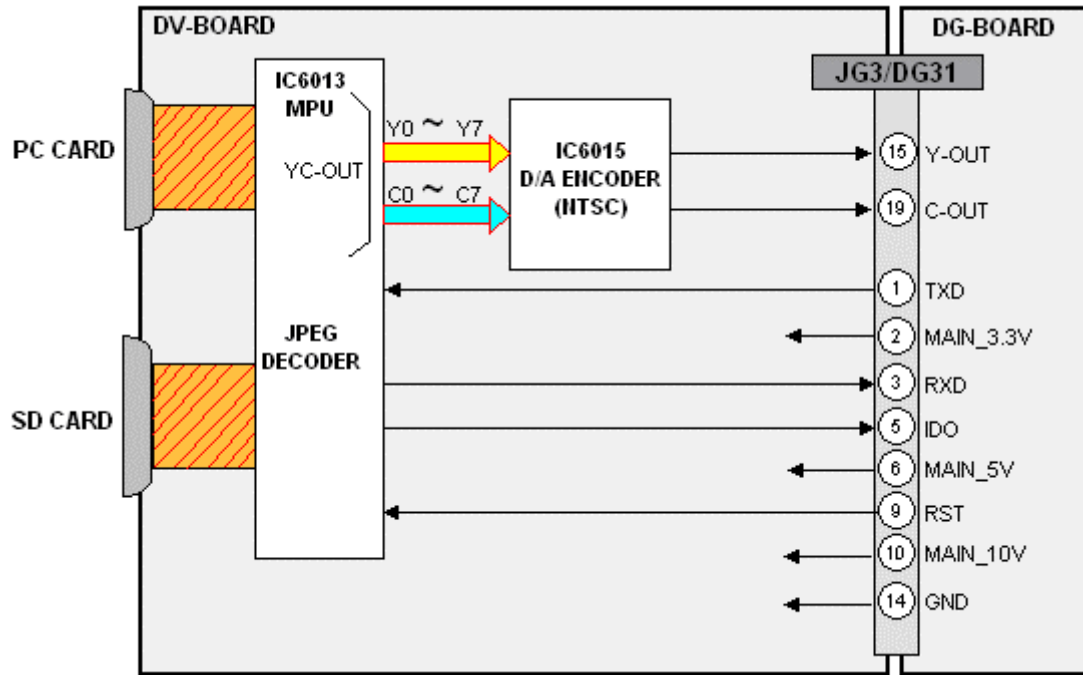


Figure 12 - Photo Viewer Signal Process

Images from a SD or PCMCIA card, inserted into the Photo Viewer card slot, are transferred to the DV-Board. After buffering, the JPEG information is decoded by IC6013 and converted to luminance and chrominance data. The digital video output of IC6013 is then converted to analog by IC6015 and output to the DG-Board via the connector JG3/DG31. On the DG-Board, the luminance and chrominance photo viewer information is selected and processed as for any other video input.

GPH7D (Onyx)

ONYX J Board Video Selector

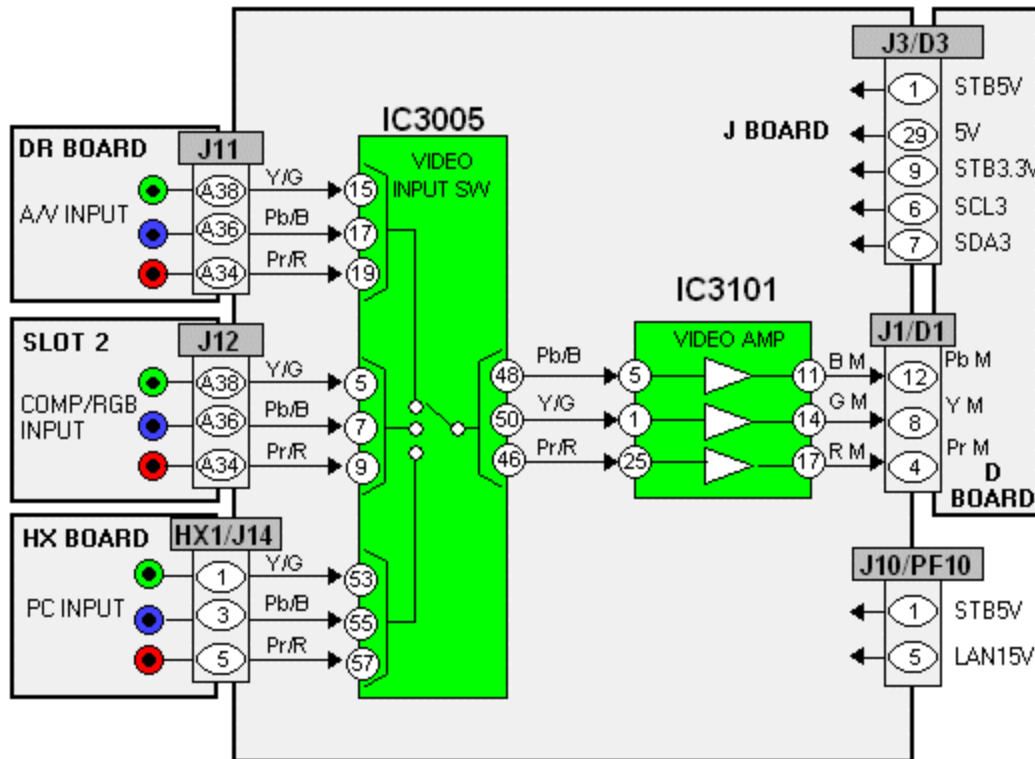


Figure 13 - J Board Video Selector

Onyx plasma panel models incorporate three video inputs. IC3005 selects between “Y, Pb, Pr” and RGB signals that are output by the DR, Slot-2, and HX boards. The “Y, Pb, Pr” or RGB signals output by IC3005 are amplified by IC3101 and applied to the D-board via pins 4, 8, and 12 of the connector J1/D1.

ONYX J Board Sync Selector

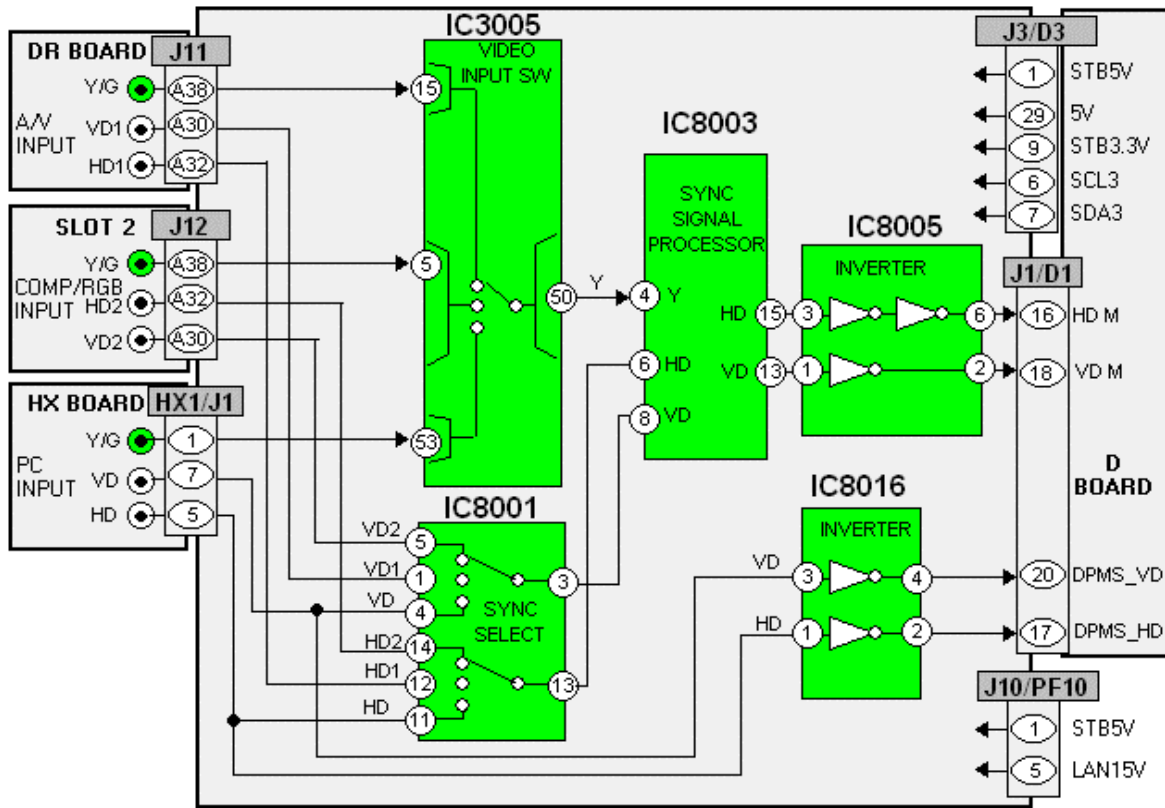


Figure 14 - J Board Sync Selector

RGB/PC Input Mode

The vertical and horizontal sync signals of the input video signals are applied via connector J11, J12 or HX1 to the Sync selector IC, IC8001. The selected vertical and horizontal sync signals are then output to the sync processor IC, IC8003. The signals from IC8003 are applied to IC8005 for wave shaping and inversion. The vertical and horizontal sync signals exit the J-board and enter the D-board via pins 16 and 18 of the connector J1/D1.

The horizontal and vertical drive signals of the HX board (PC input) are inverted by IC8016 and output to the D-board via pins 17 and 20 of the connector J1/D1.

Composite/ Component Video Input mode

The luminance (Y or G) signals are applied to an input switch (IC3005). The selected Sync signals output by IC3005 are applied to the sync processor circuit (IC8003). The horizontal and vertical pulses are separated from the Y or green signal and supplied to IC8005 for wave shaping and inversion. The sync signals are then output to the D-board via pins 16 and 18 of the connector J1/D1.

ONYX DR Board Block Diagram

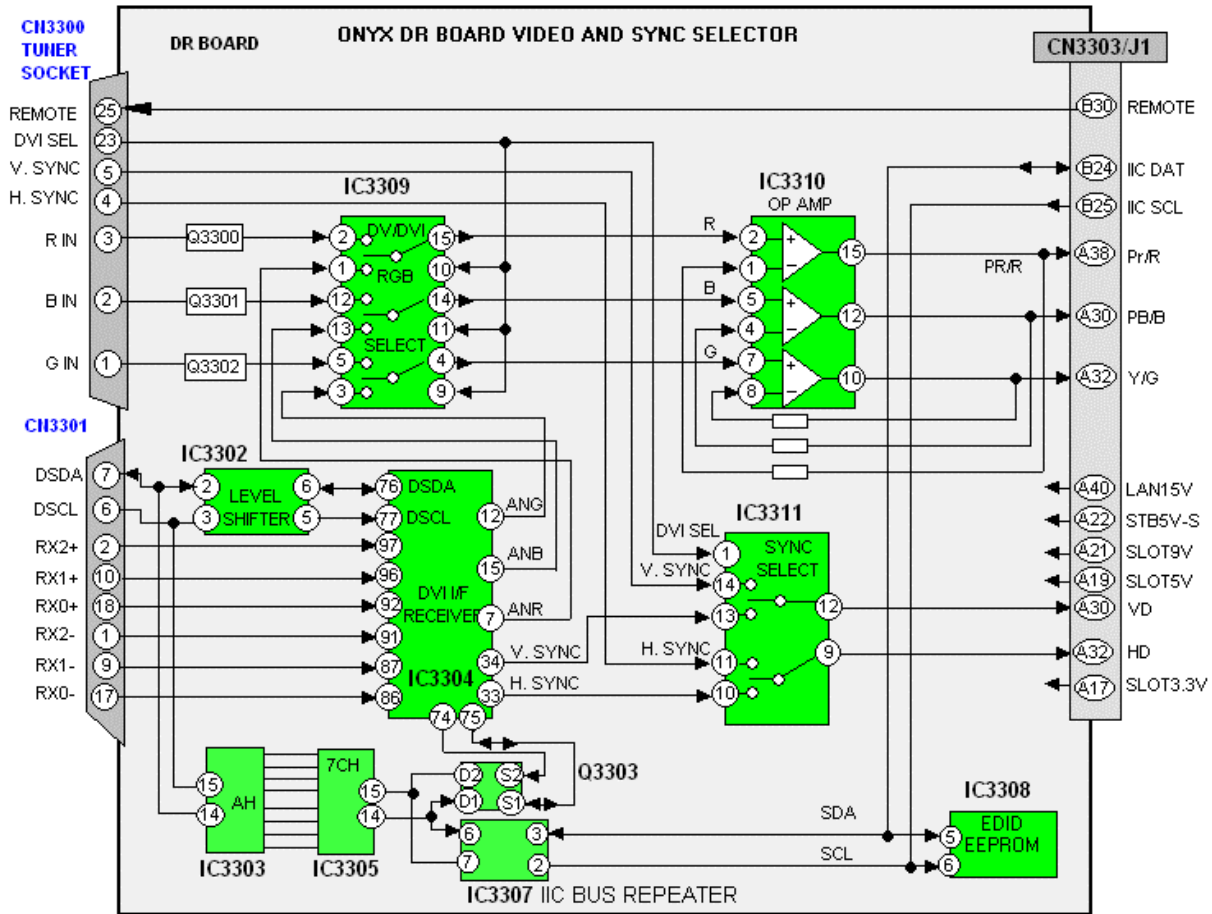


Figure 15 - DR Board Block Diagram

RGB signals output by the receiver box are input to the DR board via pins 1, 2, and 3 of the socket CN3300. Upon entry to the DR-board, these signals are buffered by the transistors Q3300, Q3301, and Q3302 and then output to IC3309 for video input selection.

Video signals, from the receiver box, are also applied via the connector CN3301, which resembles a DVI connector, and then to IC3304 for decoding into analog RGB. The RGB signals are applied to pins 1, 3, and 13 of the selector IC, IC3309. The selected RGB signals are output via pins 4, 14, and 15. The signals are then amplified by IC3310 and output to the J-Board via pins A30, A32, and A38 of the connector CN3303/J1.

Serial clock and data from the receiver box are applied via pins 6 and 7 of the video connector CN3301 to the level shifter IC, IC3302. This IC reformats the DC and signal levels of the clock and data pulses so that they match the specifications of IC3304 on the DR-board. These pulses are then applied to IC3304.

CN3301, a connector that resembles a DVI port, is designed to receive digital video from the receiver box. The HDCP (High-bandwidth Digital Content Protection) circuit monitors the applied signals for copyright protection. Serial data that originates in the receiver box is converted to parallel by IC3303, and back to serial by IC3305. This is done to remove noise that may have been introduced into the long cable that connects the receiver box and the display unit.

Clock and data output by IC3305 are applied to an I²C bus repeater circuit (IC3307) before being applied to the EEPROM IC3308. The EEPROM contains the HDCP keys used to block or allow the display of the content of a particular program. Data communication is bi-directional allowing a complete handshake to take place before a program is viewed.

The DR-board also performs sync selection of the input signals. Horizontal and vertical sync of the tuner socket are directly connected to the sync select IC, IC3311. Sync signals of the video input port are retrieved by IC3304 and provided to IC3311. The output of the sync select switch is applied to the J-board via pins A30 and A32 of the connector CN3303/J1.

Onyx RGB/Sync Analog to Digital Conversion

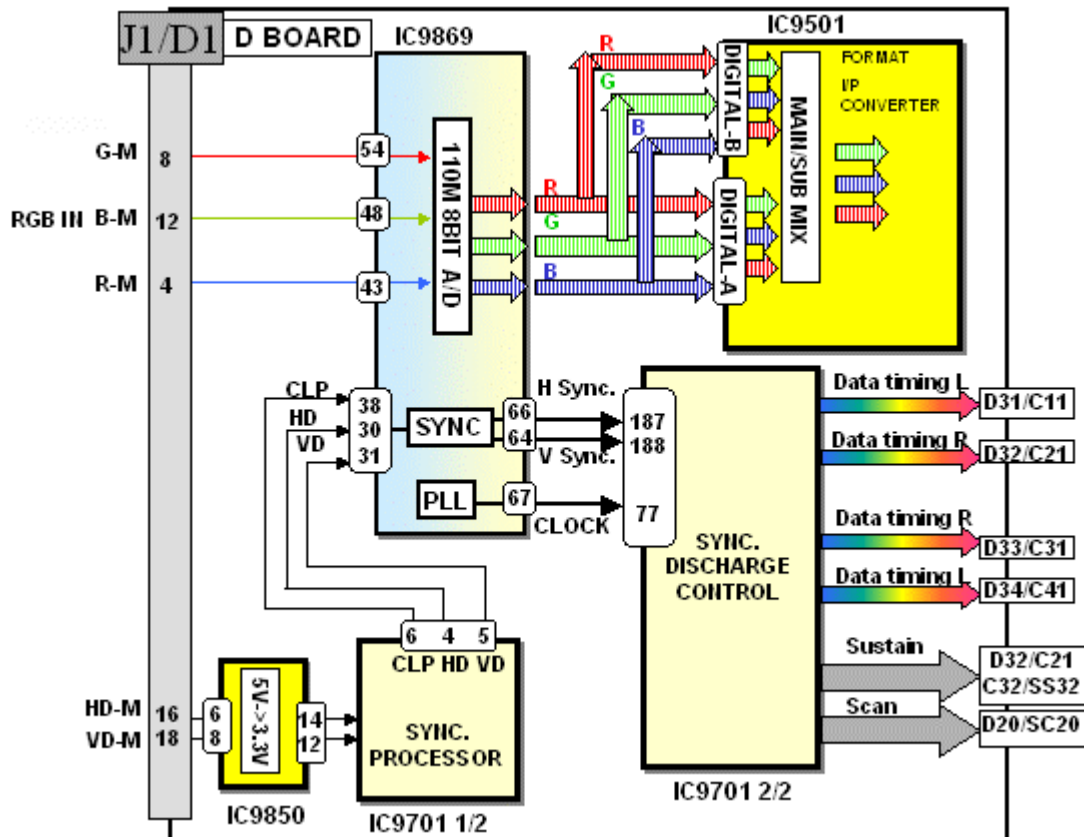


Figure 16 - D Board

RGB to Analog Conversion

The selected RGB signals enter the D-board via pins 4, 8, and 12 of the connector J1/DG1. IC9869 performs analog to digital conversion and the resulting digital data is output to IC9501. The purpose and operation of IC9501 are discussed in a later section of this manual.

Sync Processing

The horizontal and vertical sync signals enter the D-Board via pins 16 and 18 of the connector J1/DG1. On the D-Board, the level shifter IC, IC9850, changes their logic Level from 5V to 3.3V. The output signals are applied to the Sync Processor IC, IC9701 for selection between RGB sync and LVDS sync (not shown in the diagram). The selected sync signals are output to IC9869 for analog to digital conversion. IC9869 produces the digital sync and clock signals necessary for controlling the operation of the discharge control circuit, which is also located inside IC9701. This IC produces the Sustain control pulses, the Scan control pulses, and the Data timing pulse for the data drive circuit boards.

Onyx Data Drive Operation

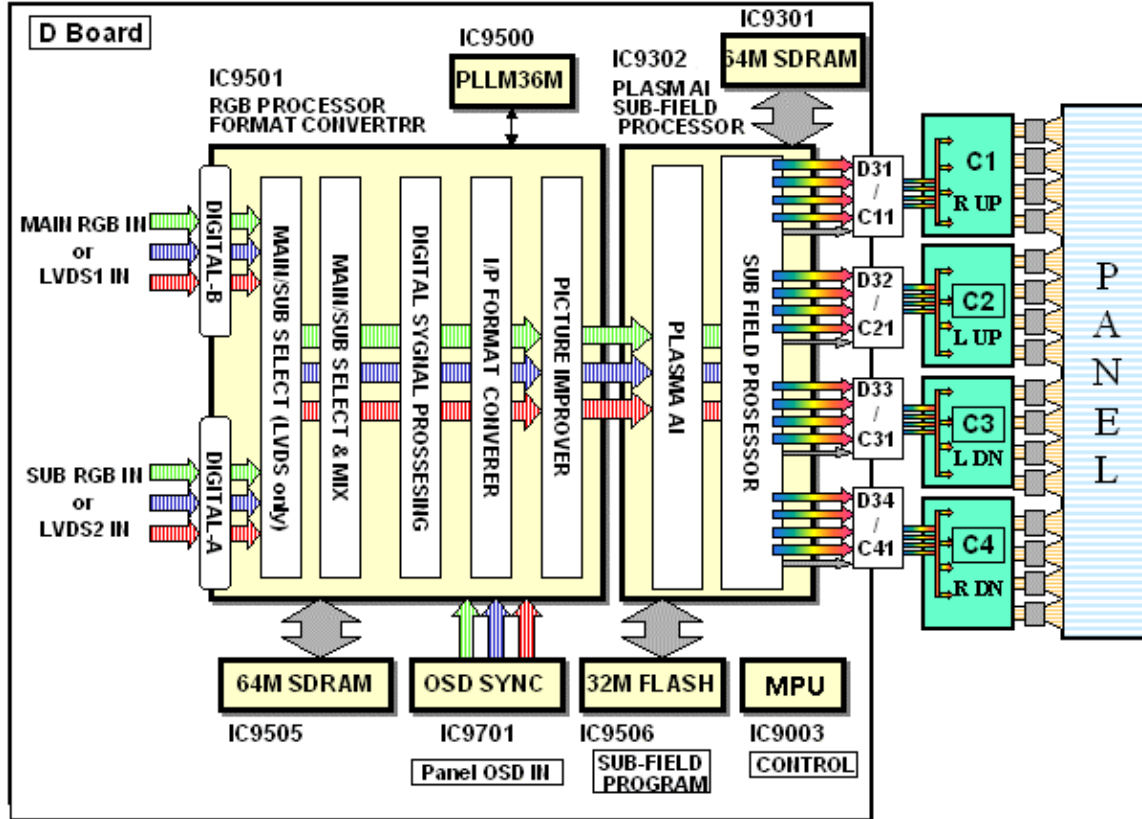


Figure 17 - Data Drive Operation

The digital signal process is performed on the D-board. The analog RGB input signals are converted to digital by IC9009 (not shown in this diagram). The 8-bit digital output data enters IC9501 for processing.

The scan format of the digital video data is converted to progressive and mixed with the OSD data. Adjustments such as white balance, contrast, color, and brightness are also corrected here.

IC9302 contains the Plasma AI (Adaptive brightness Intensifier) circuit that analyzes the video program level for the distribution of dark and bright components. The Plasma AI circuit converts the 8 bit signal data to 10 bit signal data. The Sub-field Processor is used to speed up the scanning process and control the number of Sustain periods. This increases the brightness and improves the contrast ratio. The Sub-field Processor is also used to create the four channels of data that drive the C1, C2, C3, and C4 data output boards.

The D-board provides the scan, sustain, and data drive signals. The scan pulses are output to the SC-board. The sustain pulses are output to the SS-board. The data drive signals are output to the C1, C2, C3, and C4 boards. C1 board drives the upper right portion of the panel. C2 board drives the upper left portion of the panel. C3 board drives the lower left portion of the panel. C4 board drives the lower right portion of the panel.

GPH7D (Onyx) Tuner Receiver

Onyx models have separate Tuner Receivers. This receiver connects to the monitor using two 21" cables combined in one harness (P/N K1V245L20001).



Figure 18 - Connecting Cables

All input and output connections are located on the receiver.



Figure 19 - Tuner Receiver

Photo Viewer

Compatible card types and maximum card sizes

SD card slot

- SD Card (512MB)
- Multi Media Card (128MB)
- Mini SD Card (128MB)



Figure 20 - SD and PCMCIA Slots



Figure 21 - SD Card

PCMCIA card slot

- SD Card (512MB)
- Mini SD Card (128MB)
- Multi Media Card (128MB)
- Compact Flash (1GB)
- Smart Media (128MB)
- Memory Stick (128MB)
- XD Picture Card (128MB)
- Flash ATA (128 MB)
- Memory Stick Pro (1GB)



Figure 22 - PCMCIA Adapter

Note: The cards require standard PCMCIA card adapter.
(Some PC card adapters may not be compatible.)

Mini SD Card requires Mini SD adapter.

Photo Viewer is not compatible with card type hard disk (Micro Drive, Mobile type hard disk, etc).

When both the SD card and the PCMCIA card are inserted in the slot, the SD card has priority.

Power-on Operation

Power-on Operation (TH-42PD25U)

TH-42PD25U-P Standby Circuit.

Refer to figure 24. When the unit is plugged into the AC line, the PF-board provides filtered AC voltage to the P-board through the connector P9. The AC is applied to a standby circuit (D404, T410 and IC409) where the standby 7V is generated. This voltage is applied to the 5V regulator circuit (Q552 and Q537) to generate the standby 5V.

The standby 5V is applied to the microprocessors on the D-board (IC9701 and IC9709). This voltage is also routed through the PA-board to the microprocessor on the DG board (IC001). This 5V is also applied to the EEPROM and the remote receiver sensor.

TH-42PD25U-P Power-On with Switch on the Front Panel

Refer to figure 23. When the unit is connected to the AC, the “Standby” powers-up the microprocessor IC001. As soon as the “Reset” operation of IC001 is complete, its pin 48 goes “High”. The “High” from pin 48 is routed through pins 36 of connector DG2/PA2 and pin 9 of connector PA10/PF10 to the base of the transistor Q990 on the PF-board, turning it on. This turns on the relay RL901.

Via the relay, AC is applied to the bridge rectifier D920. The DC control circuit (IC 920 and T920) regulates the resulting DC and provides two voltage sources, one is 10V and the other is 24V. Both sources are routed to the PA-Board. The 10V source is routed via pins 1 and 2 of the connector PF10/PA10, and the 24V is routed via pin 5 of the same connector.

Using DC-DC converters, many secondary DC sources are derived from the 10V and 24V sources, on the PA-Board. These secondary sources Main 9V, Main 2.5V, Main 5V, Sub 5V, BT 30V, and VD1 (5V) are all commanded by one on/off line. A “High” from pin 53 of IC001 turns on all the secondary sources when the TV is turned on by either the on/off switch on the set or remote control.

Power Detect is accomplished by applying the Main 5V via pins 11 and 13 of connector PA2/DG2 to Q030, which applies a “Low “ to pin 52 of IC001.

The on/off switch on the front panel is a momentary switch, located on the K-Board, that grounds pin 67 of IC001 when pressed.

In addition, the “High” from pin 53 is used to communicate “Power Status” to the microprocessor IC9709 on the D-Board via pin 5 of connector DG3 and pin 15 of connector D3.

The microprocessor (IC9709) on the D-board sends a “High” on its pin 45 to the P-Board via pin 2 of connector D27/P27. The relay driver Q401 activates the relay, supplying AC to D451/IC451. The resulting 380VDC is used to power the switching regulator of IC552/T502. This circuit supplies 5V, 12V, 15V, and the Vda voltage. It also supplies 21V. This voltage is applied the 15V regulator, IC550. The 15V is used as the start-up voltage for the sustain power supply (T501 and IC551), which also utilizes the 380V to start its oscillation to generate the sustain voltage (Vsus)

TH-42PD25U-P Power-On with Remote Control

The sensor receiver on the K-board receives the infrared signal from the remote control. The signal is amplified and routed through the C2-board. Then it is applied to pin 40 of the microprocessor (IC9709). The remote control signal is also applied to pin 72 of IC001 via IC9709, pin 25 of connector D3, and pin 15 of connector DG3. The microprocessor IC001 sends a “High” on pin 53, repeating the process mentioned above.

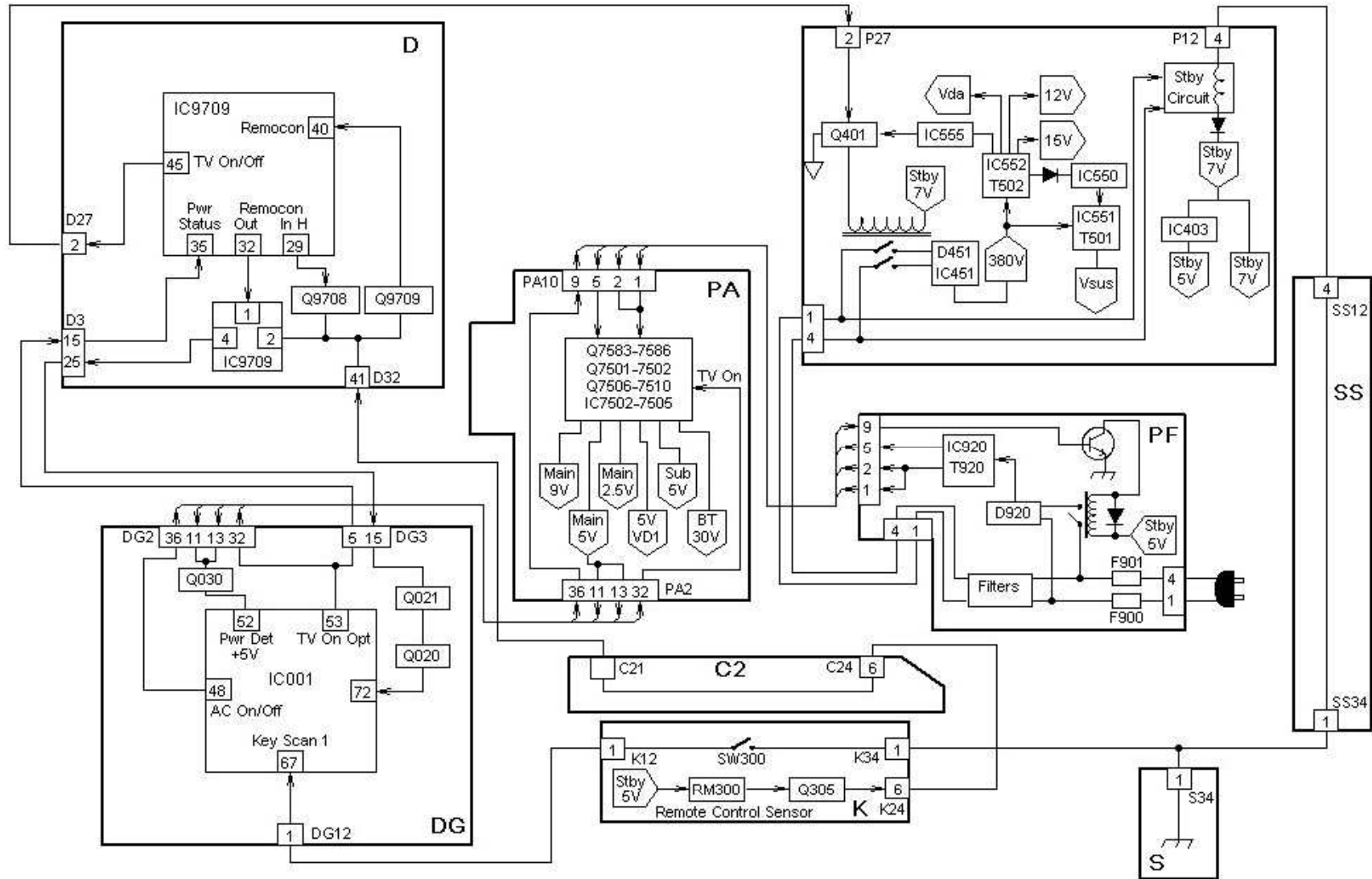


Figure 23 - TH-42PD25U Power on operation

How to troubleshoot a “no power condition for the TH-42PD25U

Is the power LED red at power up?																	
Yes				No													
Does the voltage at pin 2 of P27 go high when power is turned on?				Is 5V present on pin 4 of connector P27 on the P board?													
Yes		No															
The P board is possibly defective		Is the voltage high at pin 9 of PF10 on the PF board?		Yes		No											
		Yes	No	Check the K and PA boards		Is there AC going in to pins 1 and 4 of connector P9 on the P board?											
Is there 10V on pin 1, and 24V on pin 5 of connector PF10 on the PF board?			The D or the DG board may be defective				Yes	No									
Yes			No			Replace the P board	If fuses on the PF are ok, the PF board										
<table><tr><td>3</td><td>7</td><td>11</td><td>17</td><td>21</td><td>25</td></tr><tr><td>5V</td><td>5V</td><td>5V</td><td>10V</td><td>9V</td><td>2.5V</td></tr></table> Can you confirm these voltages at connector PA12 on the PA board?			3			7	11	17	21	25	5V	5V	5V	10V	9V	2.5V	The PF board may be the problem
3	7	11	17	21	25												
5V	5V	5V	10V	9V	2.5V												
Yes		No															
Check the D and the DG boards		Check The PA board															

Table 2

Power On Operation (TH-42PX25U)

TH-42PX25U-P CPU Requirements and Standby Circuit.

Refer to figure 24. When the unit is plugged into the AC line, the PF board provides filtered AC voltage to the P-board through the connectors PF2 and P9. The AC is applied to a standby circuit (D404, T410 and IC409) where the standby 7V is generated. This voltage is applied to the 5V regulator circuit (Q552 and Q537) to generate the standby 5V.

The standby 5V is applied to the microprocessors on the D-board (IC9701 and IC9709). This voltage is also routed through the PA-board, to the microprocessor on the DG board (IC001). 5V are also applied to the EEPROM and the remote receiver sensor.

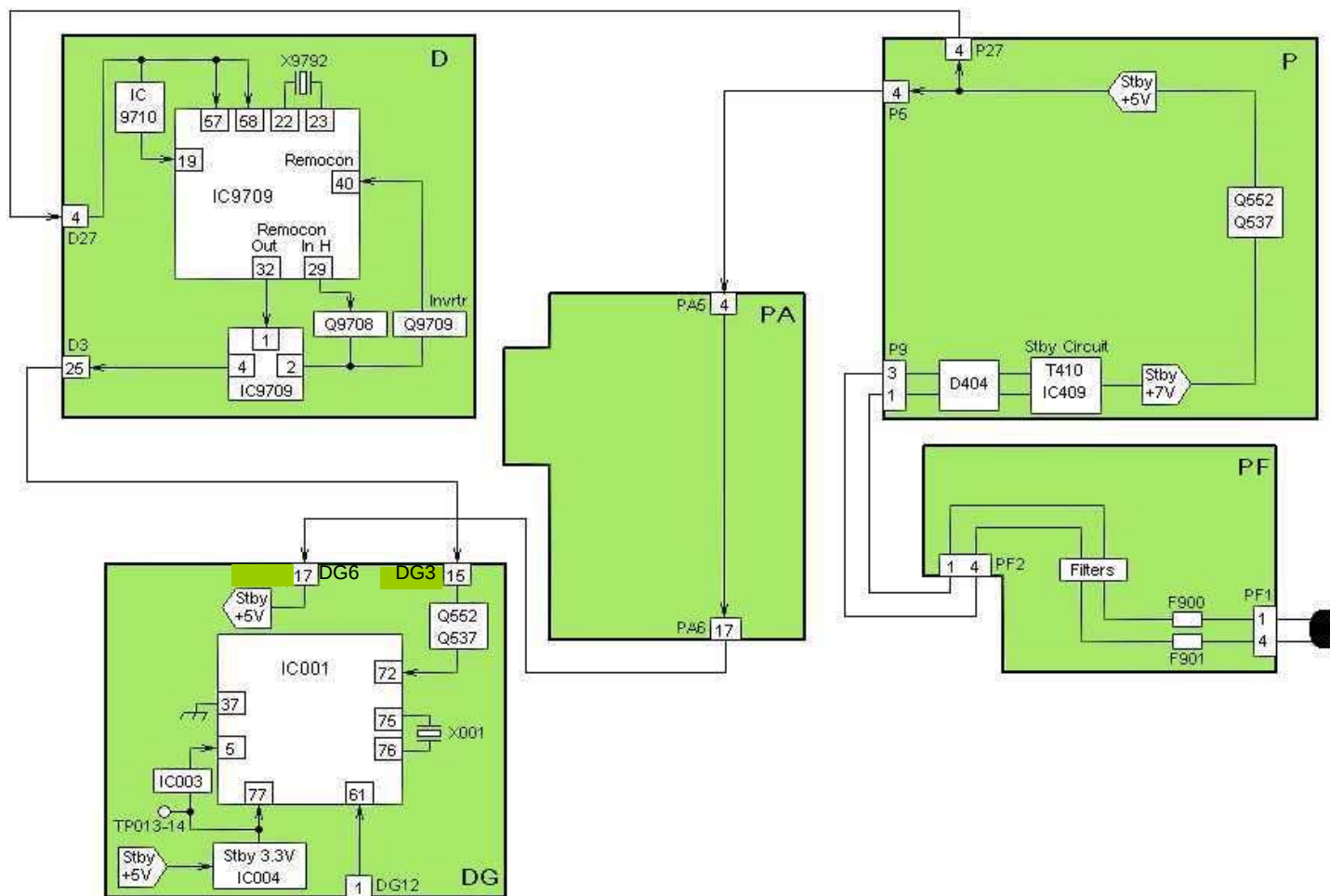


Figure 24 - TH-42PX25U Power on operation

TH-42PX25U-P Power-On with Switch on Front Panel

Refer to figure 25. When the unit is connected to the AC, the “Standby” powers-up the microprocessor IC001. As soon as the “Reset” operation of IC001 is complete, its pin 48 goes “High”. The “High” from pin 48 is routed through pins 36 of connector DG2/PA2 and pin 9 of connector PA10/PF10 to the base of the transistor Q909 on the PF-board, turning it on. This turns on the relay RL901.

Via the relay, AC is applied to the bridge rectifier D920. The DC control circuit (IC 920 and T920) regulates the resulting DC and provides two voltage sources, one is 10V and the other is 24V. Both sources are routed to the PA-Board. The 10V source is routed via pins 1 and 2 of the connector PF10/PA10, and the 24V is routed via pin 5 of the same connector.

Using DC-DC converters, many secondary DC sources are derived from the 10V and 24V sources, on the PA-Board. These secondary sources Main 9V, Main 2.5V, Main 5V, Sub 5V, BT 30V, and VD1 (5V) are all commanded by one on/off line. A “High” from pin 53 of IC001 turns on all the secondary sources when the TV is turned on by either the on/off switch on the set or remote control.

Power Detect is accomplished by applying the Main 5V via pins 11 and 13 of connector PA2/DG2 to Q030, which applies a “Low “ to pin 52 of IC001.

The on/off switch on the front panel is a momentary switch, located on the K-Board, that grounds pin 67 of IC001 when pressed.

In addition, the “High” from pin 53 is used to communicate “Power Status” to the microprocessor IC9709 on the D-Board via pin 5 of connector DG3 and pin 15 of connector D3.

The microprocessor (IC9709) on the D-board sends a “High” on its pin 45 to pin 18 of the power control IC, IC501 on the P-Board (power supply board). Accordingly, the power supply board turns-on and provides the necessary TV run voltages as Vsus, Vda, the 15V, the 12V, and the 5V.

TH-42PX25U-P Power-On with Remote Control

The sensor receiver on the K-board receives the infrared signal from the remote control. The signal is amplified and routed through the C2-board. Then it is applied to pin 40 of the microprocessor (IC9709). The remote control signal is also applied to pin 72 of IC001 via IC9709, pin 25 of connector D3, and pin 15 of connector DG3. The microprocessor IC001 sends a “High” on pin 53, repeating the process mentioned above.

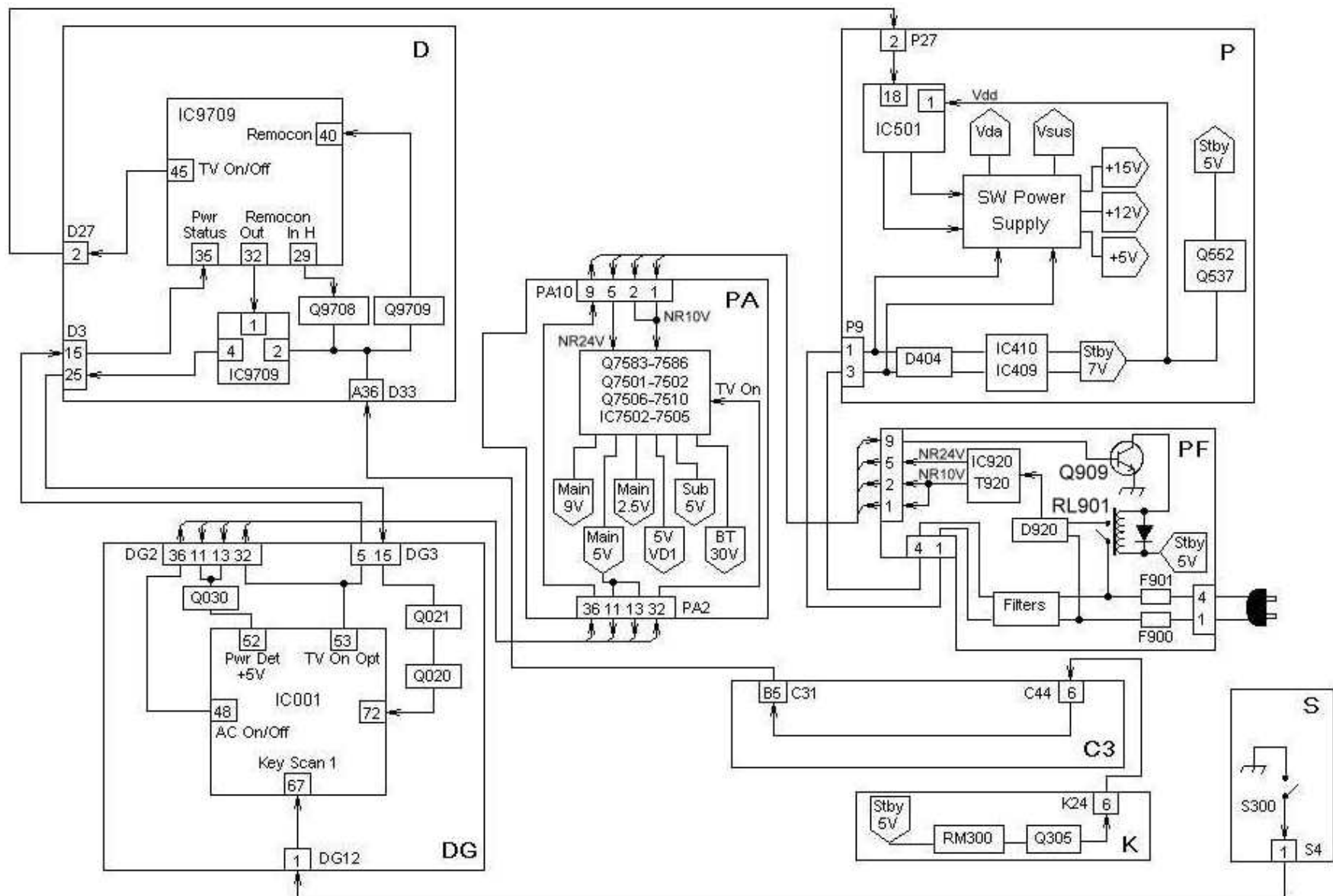


Figure 25 - TH-42PX25U-P Power on operation

How to troubleshoot a “no power condition for the TH-42PX25U

Is the power LED red at power up?																		
Yes				No														
Does the voltage at pin 2 of P27 go high when power is turned on?				Is 5V present on pin 4 of connector P27 on the P board?														
Yes		No																
The P board is possibly defective		Is the voltage high at pin 9 of PF10 on the PF board?		Yes		No												
		Yes	No	Check the K and PA boards		Is there AC going in to pins 1 and 4 of connector P9 on the P board?												
Is there 10V on pin 1, and 24V on pin 5 of connector PF10 on the PF board?			The D or the DG board may be defective			Yes	No											
Yes			No			Replace the P board	If fuses on the PF are ok, the PF board											
<table><tr><td>3</td><td>7</td><td>11</td><td>17</td><td>21</td><td>25</td></tr><tr><td>5V</td><td>5V</td><td>5V</td><td>10V</td><td>9V</td><td>2.5V</td></tr></table> Can you confirm these voltages at connector PA12 on the PA board?			3	7	11	17	21	25	5V	5V	5V	10V	9V	2.5V	The PF board may be the problem			
3	7	11	17	21	25													
5V	5V	5V	10V	9V	2.5V													
Yes		No																
Check the D and the DG boards		Check The PA board																

Table 3

Power-on Operation (TH-65XVS30U)

Refer to figure 26. On the Onyx line of Plasma TV, power can be turned on whether the tuner box is connected or not. This is done to isolate defects when troubleshooting this TV.

The power switch is of the latch type, and is located on the side of the TV. When the power switch is pressed, the TV comes on and it displays "NO SIGNAL" on the upper right hand corner of the screen. Also, the power LED turns blue.

If the power is turned off using the remote control, the unit goes off and the power LED turns red. If the power is turned off using the power button on the TV, the LED goes off.

Note: If the TV is connected to a receiver and the signal cable (with a DVI-like connector) is left disconnected, the TV turns on with no OSD and then shuts off, a few seconds later.

Power-On with Switch on Front Panel

The following circuit operation discussion applies to the plasma monitor only, with the tuner (receiver box) disconnected.

Refer to figure 26. The AC from connector P9 is applied to a bridge rectifier (D404). The DC voltage from D404 is then applied to the stand-by circuit (IC409, IC408, IC504, and T410).

This circuit supplies 12V and 5V(7V on schematic). The diode D511 rectifies the 12V, and D510 rectifies the 5V(7V on schematic).

The 5V is connected to a 5V regulator (IC700) on the Power Control board (PC) via pin 12 of the connector P700/PC700. The regulated 5V serves as the VCC source for IC 701 on the PC-Board.

The 12V is routed through the sustain (SS) board to the power on/off switch on the S1-board. When power is turned on, the 12V is applied to one side of the coil of the power relay RL403 and to the gate of Q538. The 12V is also used to turn on the switching transistor Q712 on the PC-Board applying a "Low" to the Standby Power-Detect pin 7 of the microprocessor IC701.

When pin 7 of IC701 goes "Low", pin 16 goes "Low", turning Q708 off. The "High" on collector of Q708 is applied to the gate of Q537 via pin 11 of the connector P700/PC700. Q537 turns on and since the gate of Q538 is already at a "High", the two transistors conduct the Standby 5V to pin 4 of the connector P27/D27. On the D-Board, the Standby is regulated down to 3.3V and supplied to the VCC pin of IC9003. IC9003 send a "High" on pin 20, which is applied via pin 2 of connector D27/P27 and pin 15 of connector P700/PC700 to pin 18 of the microprocessor IC701 on the PC-Board. In response, pin 9 of IC701 goes "High". This "High" turns on Q713, which applies a

“High” via pin 6 of connector P700/PC700 to the base of Q501 on the P-Board. Q501 turns on providing a current return path for the coil of RL403. RL403 turns on and applies AC to the rectifier D401.

The 5V source is routed through the D, the C5, and the C4 boards to power the Remote Control Receiver on the V1 board.

The power supply for the SC-Board is controlled by the same control lines as the power supply for the SS –Board, via the connector PC701/P700. This allows both Power supplies to run in tandem.

Power-On with Remote Control

The signal from the remote control is picked-up by the remote control receiver on the V1 board and routed through the C4 and C5 boards before it is applied to connector D33 on the D board. On the D board, the signal is applied to a DC level shifter circuit (Q9015 and Q9016) to change the logic level of the data to 3.3V. The signal is then applied to pin 102 of IC9003. Pressing the on/off button on the remote transmitter causes IC9003 to toggle its output on pin 20 between “High” and “Low”. As discussed above, pin 20 controls current return path of the coil of the relay RL403.

How to troubleshoot a “no power” condition for the TH-65XVS30

Can 5V be measured on pin 4 of connector P27 when turning the power on?				
No			Yes	
Does pin 11 of P700 of the SS Power board go high?			Does pin 2 of P27 of the P board SS go high?	
No	Yes		Yes	No
Does pin 20 of P700 of the SS Power board go high?	Check the SS Power board, and the SC Power board		Does pin 6 of P700 of the SS Power board go high?	
			Yes	No
No	Yes		Check the SS Power board, and the SC Power board	Check the PC board
Can 12V be measured on pin 10 of connector P12 when turning the power on?	Check the PC board			
Yes	No			
Check the SS Power board, and the SC Power board	Can 12V be measured on pin 8 of connector P12 when turning the power on?			
	Yes	No		
Check the S1 board and connections on the Sustain (SS) board			Check the SS Power board, and the SC Power board	

Table 4

Protection Circuits

TH-42PD25U-P Protection Circuits

Protection circuits are incorporated in the unit to prevent the failure of a single circuit or a component from creating catastrophic damage.

A shutdown occurs when an over voltage condition, a short, or a drop in any of the voltage lines occurs. Also, shutdown occurs when any of the fans draw more current than normal.

The microprocessor IC9709 monitors the SOS lines to detect a shutdown condition and relays the information to the main microprocessor to shut the unit down.

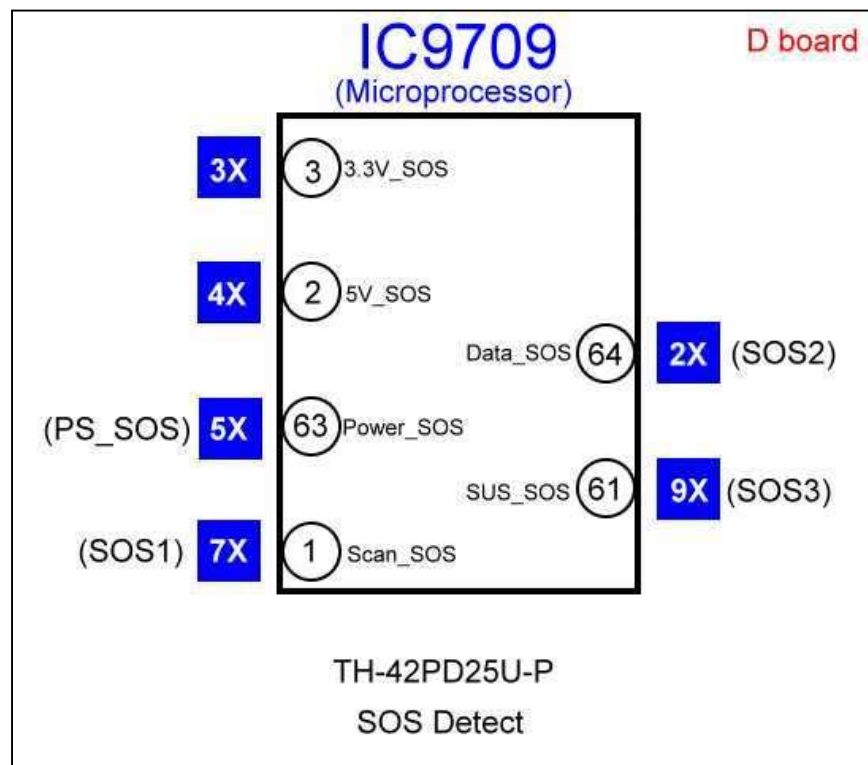


Figure 27 - TH-PD25U_SOS Detect Circuit

When an abnormality has occurred, the unit protection circuit operates and the TV is reset to the stand-by mode. When that occurs, the defective block can be identified by the number of blinks of the POWER LED on the front of the unit.

The following table identifies the areas where a problem is suspected according to the number of times that the POWER LED blinks.

Power LED blinking timing chart for the TH-42PD25U-P

Number of Times the Power LED Blinks	
2	Scan Driver 1 SOS2 (TPSOS2 (L6604) on SC Board)
3	3.3V SOS
4	5V SOS
5	Power Supply SOS (Pin 7 of connector P27)
6	-
7	SOS1 (Scan Driver 2) TPSOS1 (L6603) on SC Board)
8	-
9	SUS Driver (TPSOS3 on "SS" Board)
12	PA board

Table 5

TH-42PD25U PA board SOS detect

Transistor Q7541 on the PA board monitors the UNR24V, the UNR10V, and the +9V. If any of these supply lines develop a short circuit, transistor Q7541 goes into conduction and applies a high to pin 69 of the MPU, IC001, through pin 33 of connector PA2 on the PA board. This triggers the SOS circuit.

Transistor Q7544 monitors the +5V, and +2.5V line. If any of these supply lines increase in voltage transistor Q7544 goes into conduction causing its collector to go low. As a result, Q7541 conducts and applies a high to pin 69 of the MPU, IC001, through pin 33 of connector PA2 on the PA board. This triggers the SOS circuit.

The main +9V, the VD1+5V, the main 5V, and the main +2.5V are also monitored for a drop in voltage. A decrease in any of these two supply lines forces the respective diode to conduct and trigger Q7542. A high is applied to pin 69 of the MPU, IC001, through pin 33 of connector PA2 on the PA board. This triggers the SOS circuit.

Note: This circuit is identical to the circuit used in the TH-42PX25U-P model.

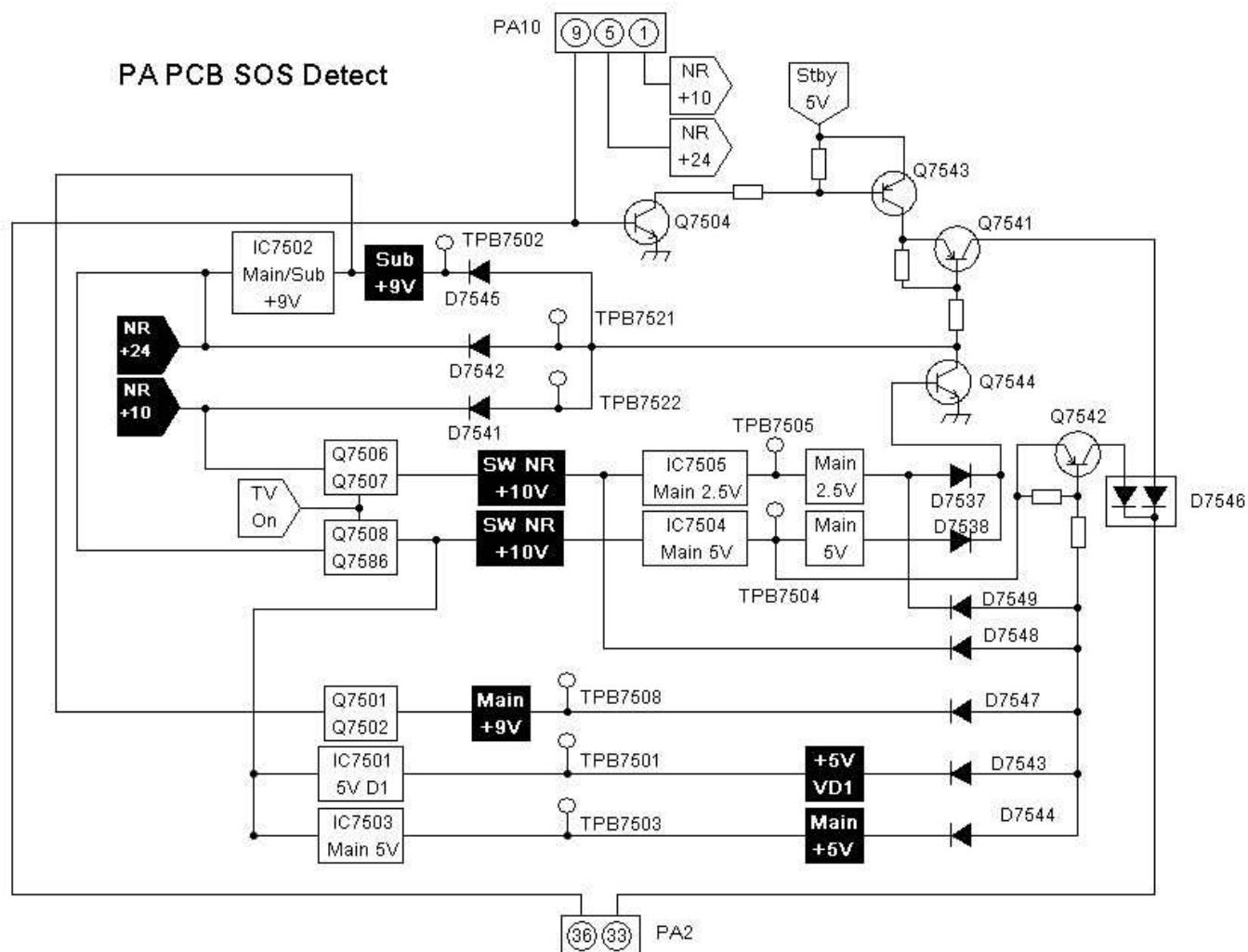
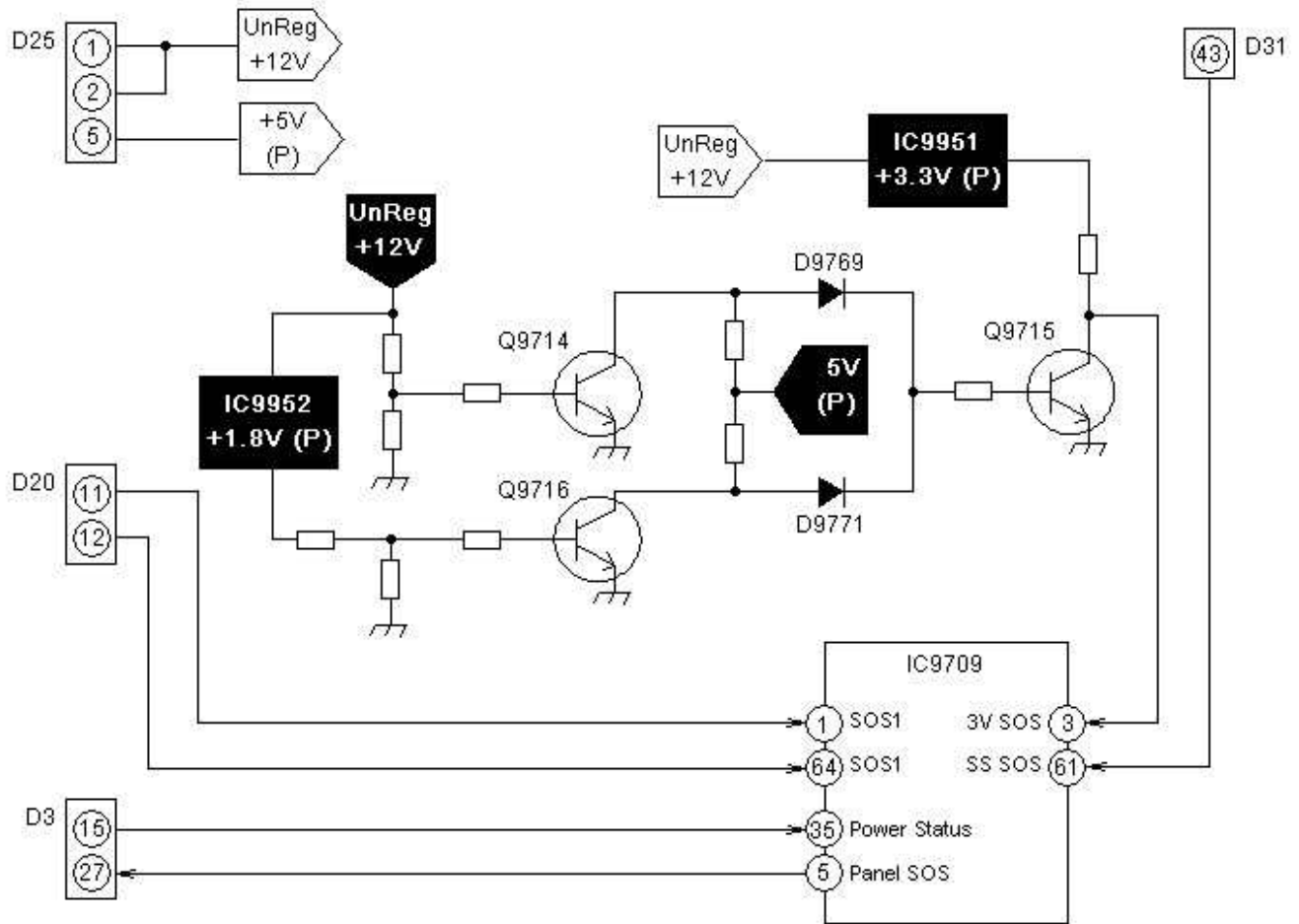


Figure 28 - TH-42PD25U PA board SOS detect

TH-42PD25U 3.3V SOS detect

The Unregulated 15V and 1.8V lines are monitored for a voltage decrease. Under normal conditions, the voltage drop derived from the voltage divider circuits at the base of Q9714 or Q9716 is enough to turn the transistor on. However, should the voltage drop decrease, either Q9716 or Q9714 turns off, allowing 5 volts at their collectors to forward bias transistor Q9715. This effectively grounds pin 3 of the CPU IC9709 on the D board, triggering the shutdown circuit.



D Board SOS Detect

Figure 29 - TH-42PD25U 3.3V SOS detect

TH-42PD25U SC and SS SOS Detect

The Scan and Sustain voltages on the SC and SS boards are monitored in a similar manner. The +15V Line on the SS board is fed to a voltage divider and the result is compared to a reference voltage. The reference voltage is provided by a zener diode. If the output of the comparator goes high, a transistor turns on, effectively grounding the SOS line. The SC board uses a similar circuit.

Additionally, the SS and SC boards contain LED indicators to alert the technician when a problem exists. The LED should be lit during normal operation, a dark LED indicates that a problem exists on that board.

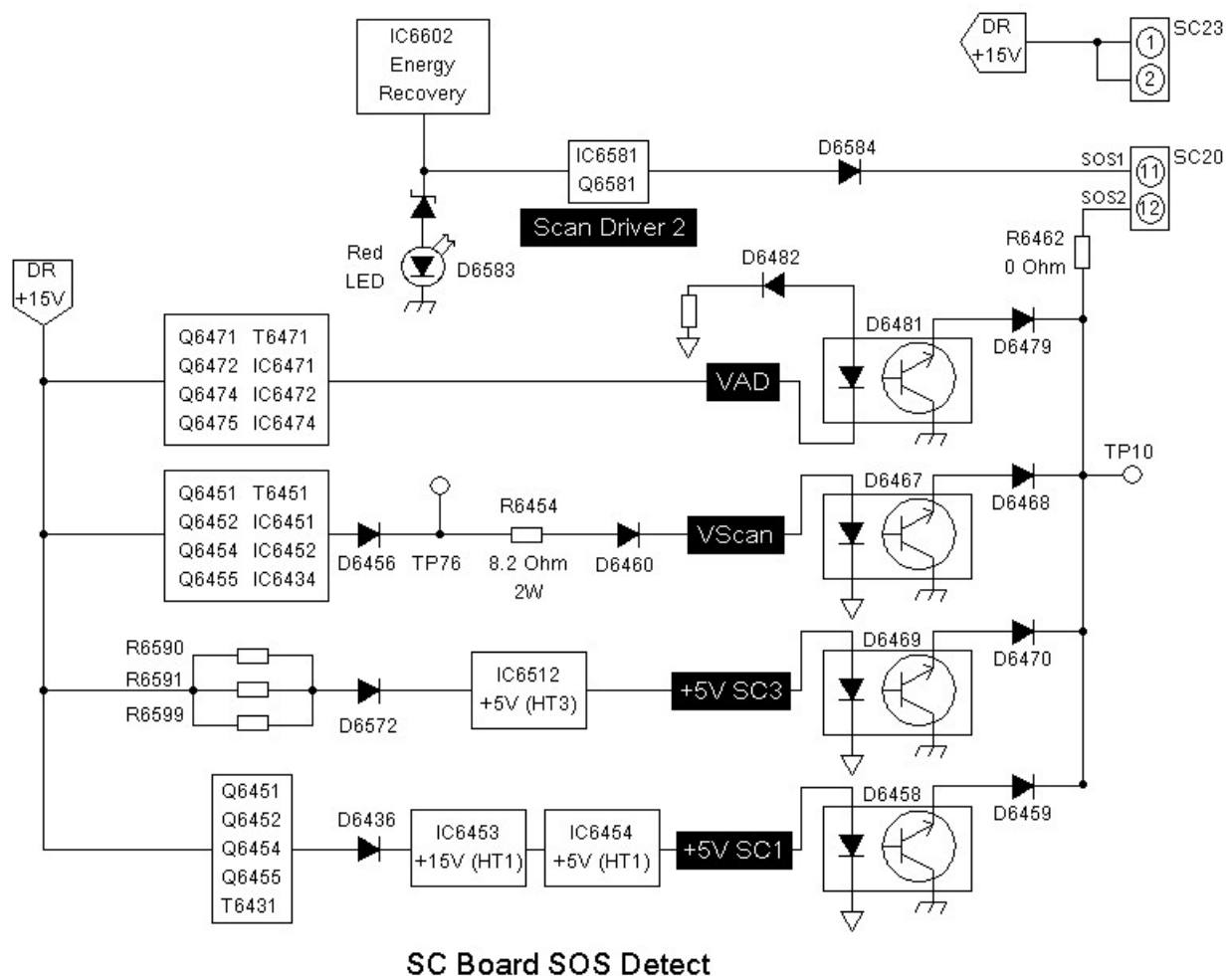


Figure 30 - SC board SOS Detect

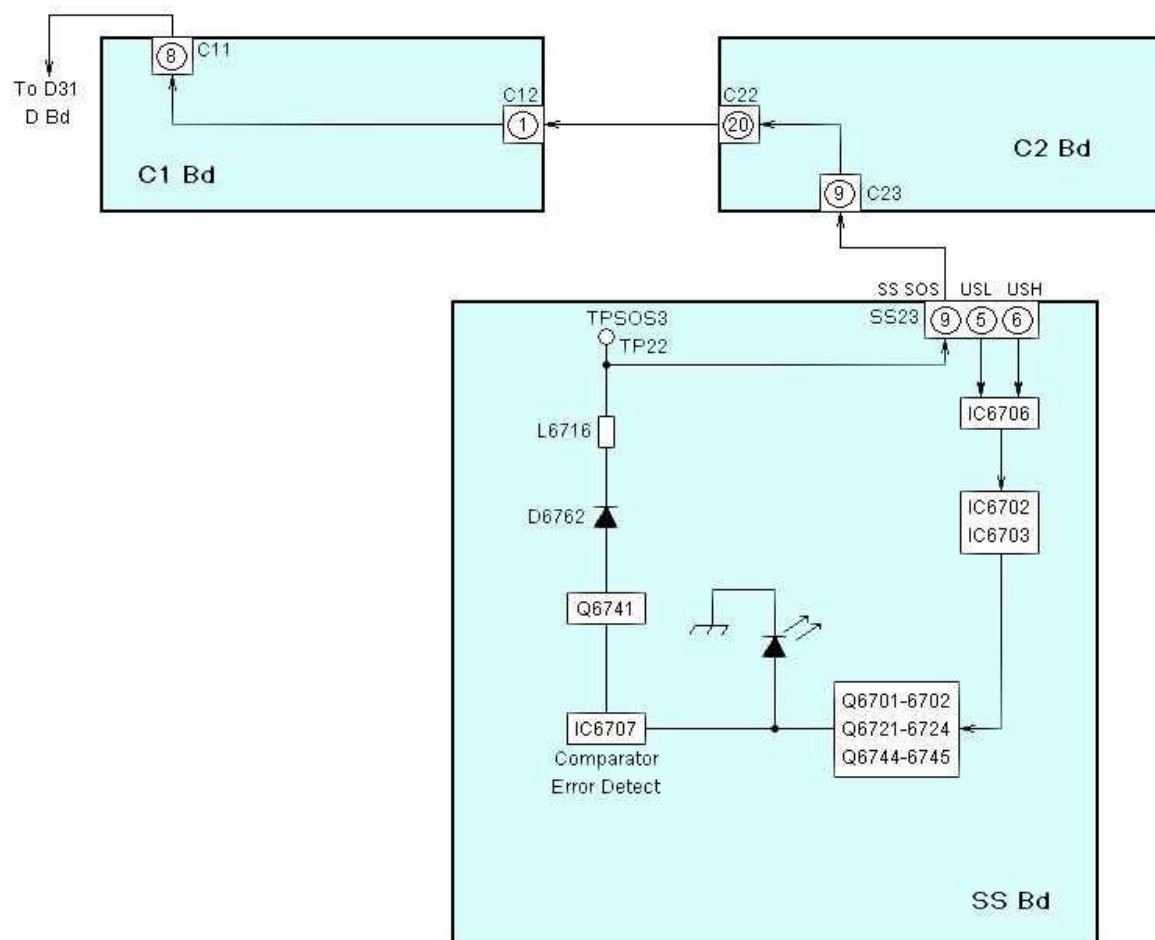


Figure 31 - SS board SOS Detect

Power LED blinking timing chart for the TH-42PD25U-P

Number of Times the Power LED Blinks	
1	-
2	SOS2 (pin 12 SC20 on SC Board)
3	3.3V SOS (Pin 1 P25)
4	5V SOS (Pin 5 P25)
5	Power Supply SOS (Pin 7 of connector P27)
6	-
7	SOS1 (Scan Driver 2) pin 11 SC20 on SC Board)
8	-
9	SUS Driver pin9 SS23 (L719) "SS" Board)
10	-
11	-
12	Tuner Power
13	Fan SOS (pin 33 of PA2 (Cathode of D7546) on "PA" Board)

Table 6

TH-42PD25U-P

Note: The numbers followed by the letter “X” within this picture indicate the number of times the “POWER” LED flashes.

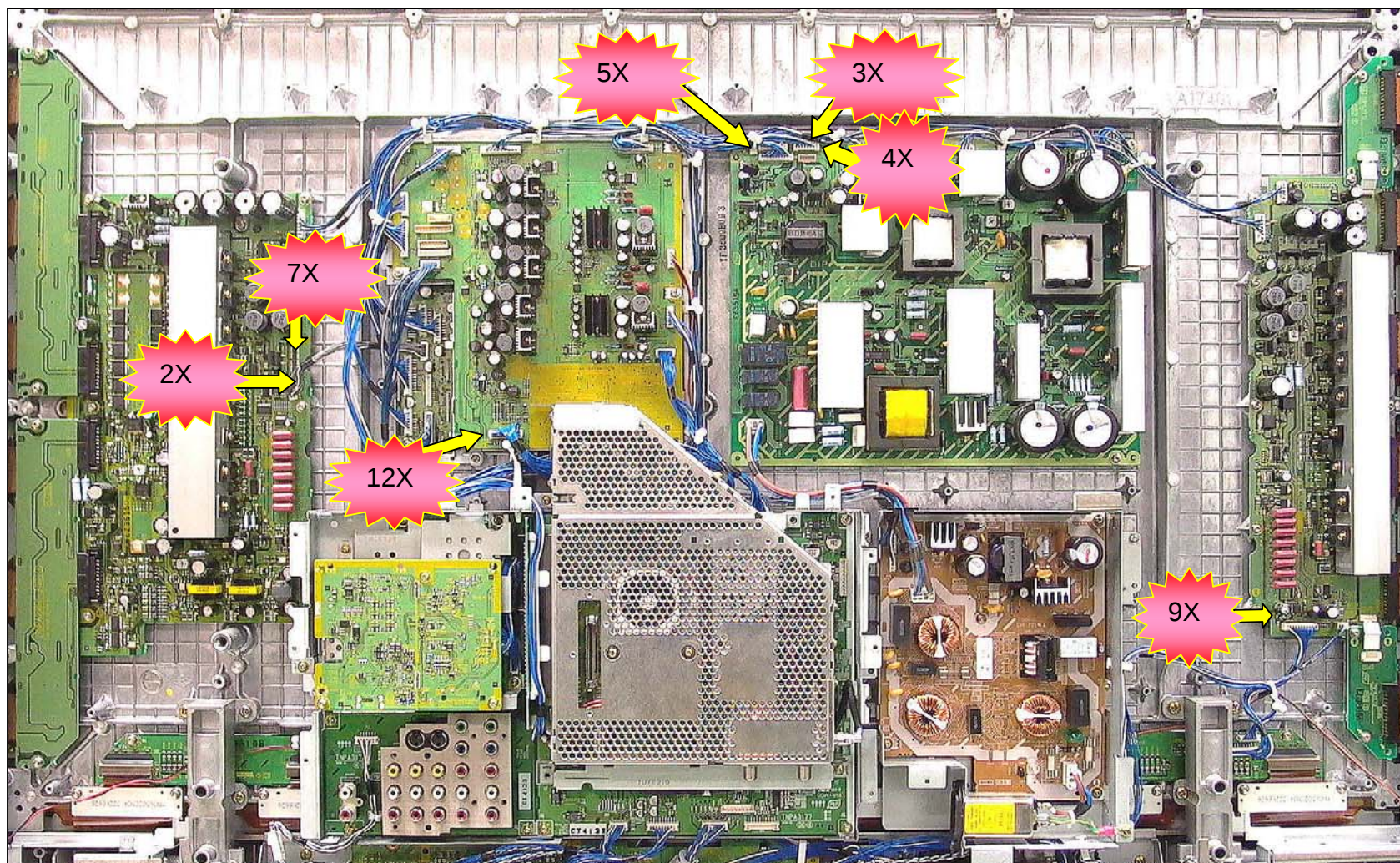
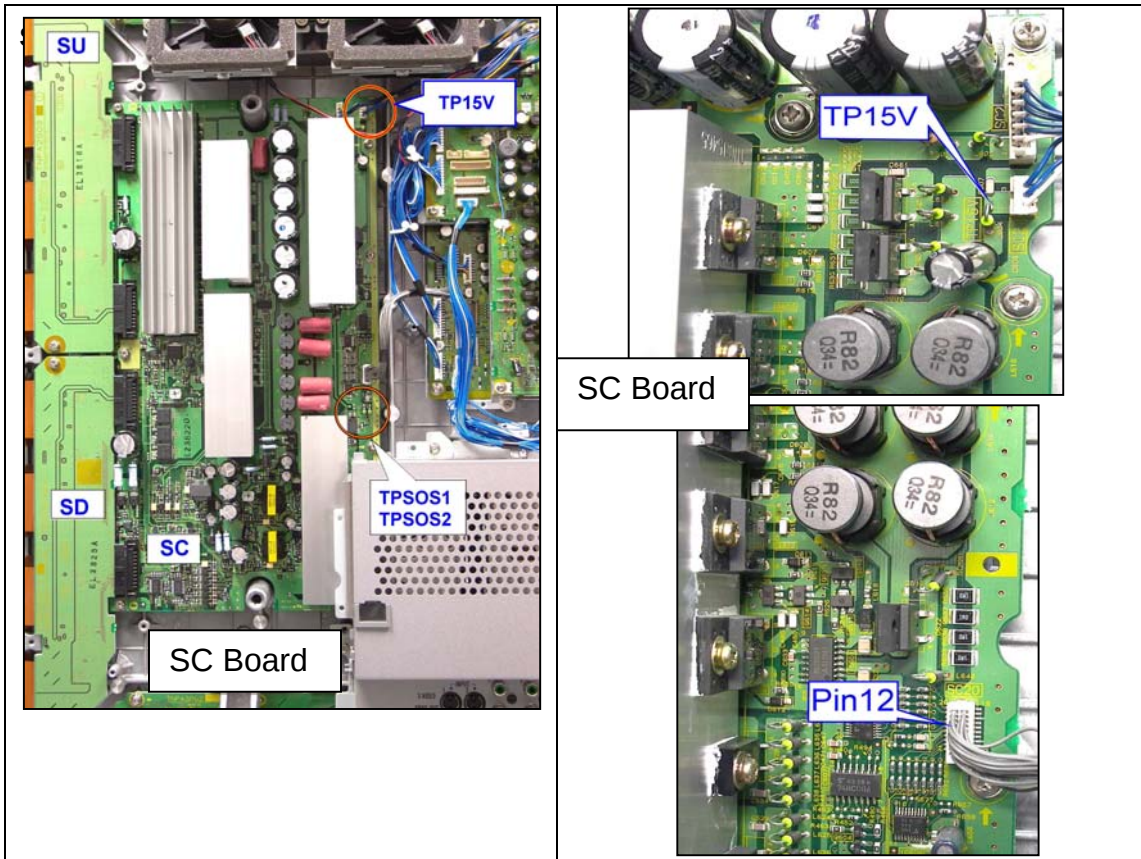
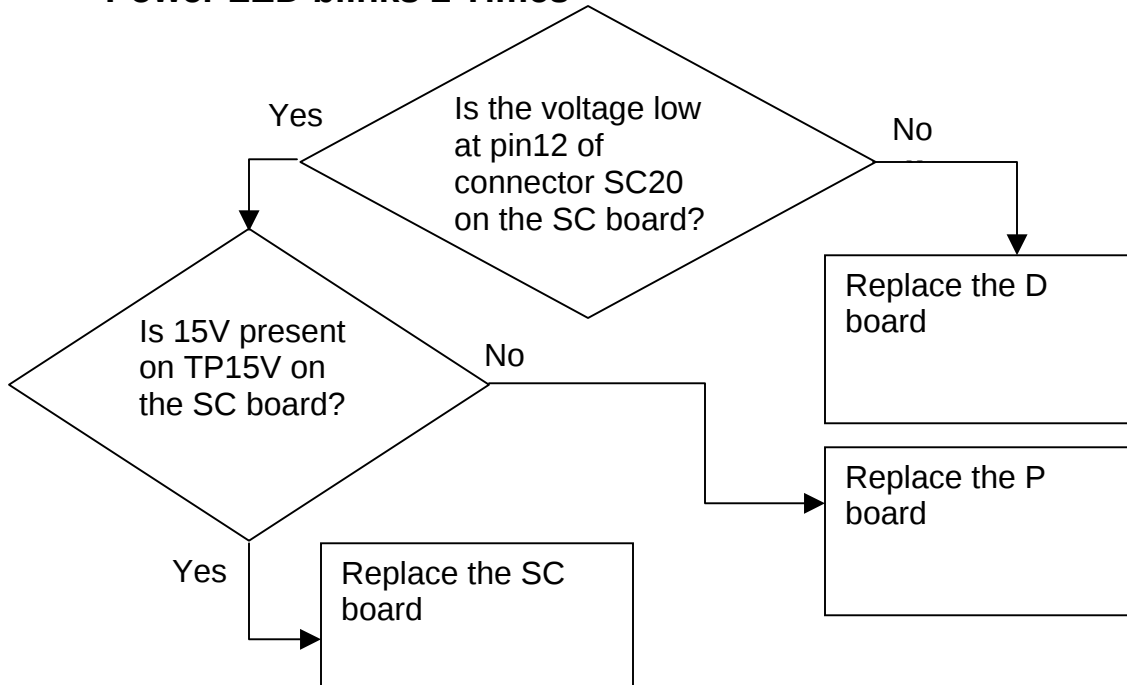


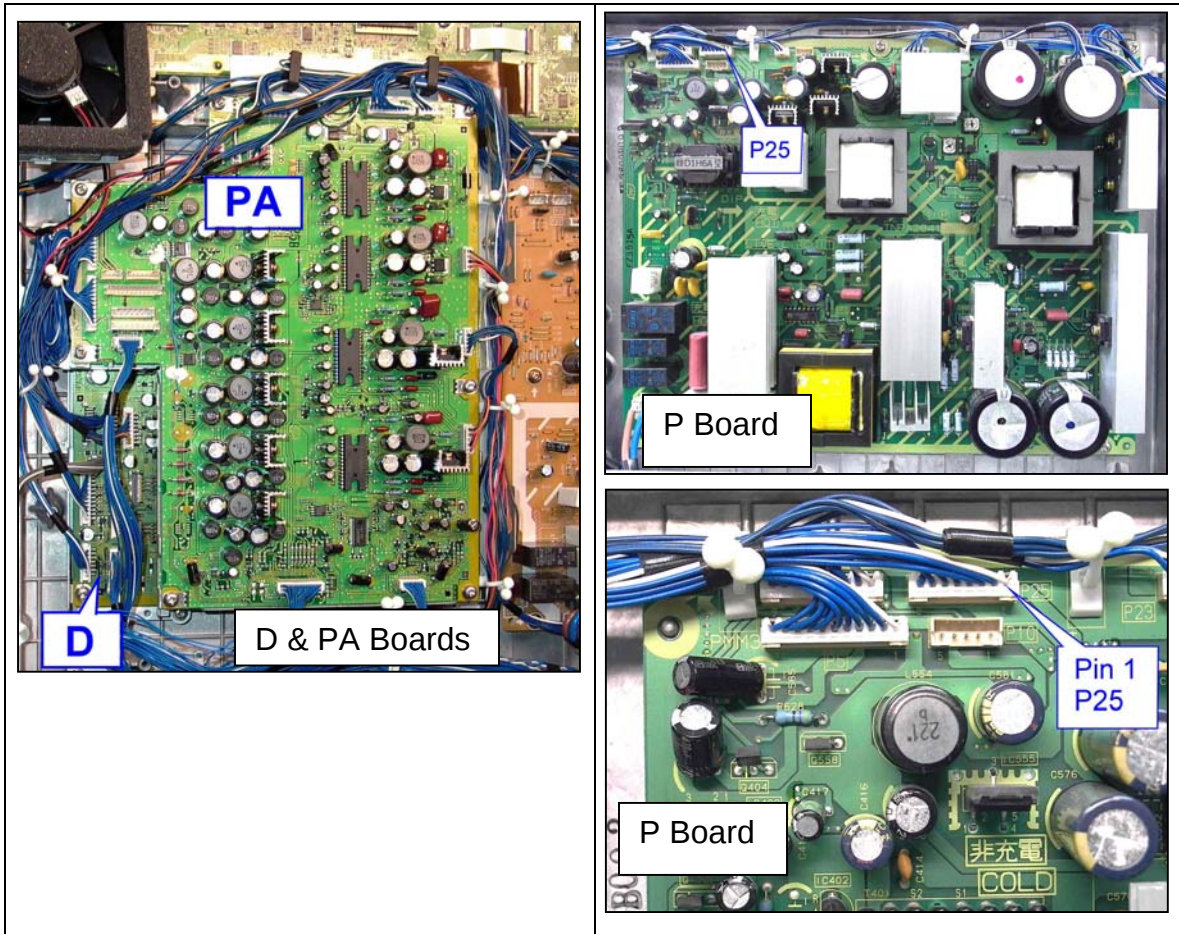
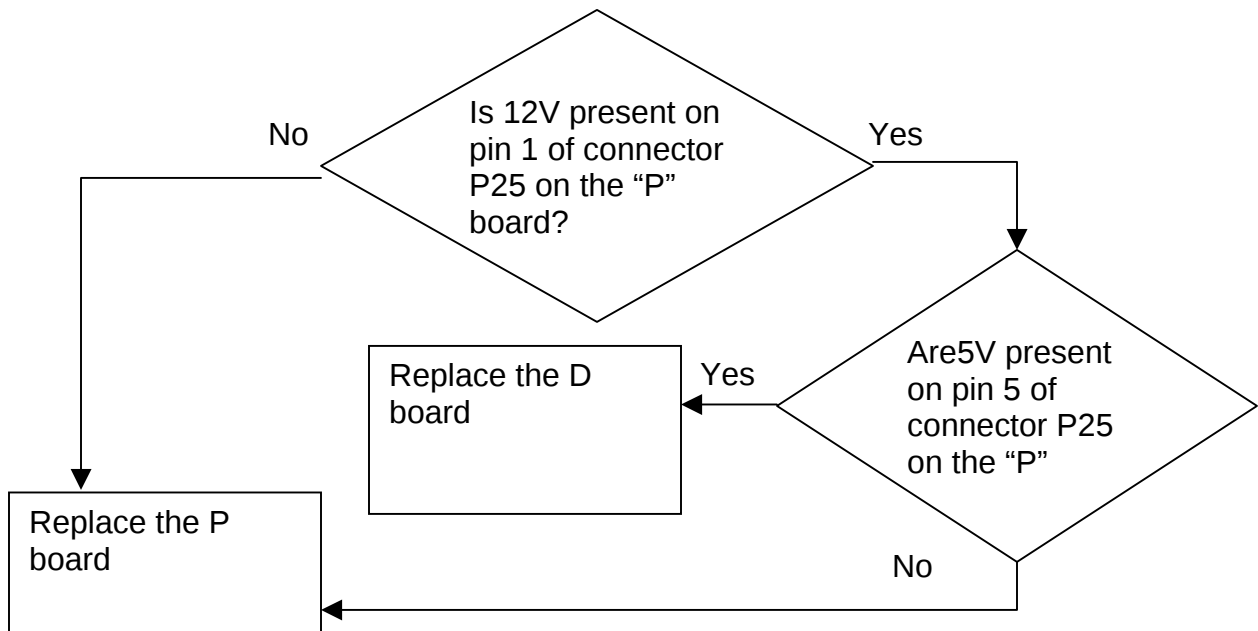
Figure 32 - TH-42PD25U

Troubleshooting chart for the TH-42PD25U

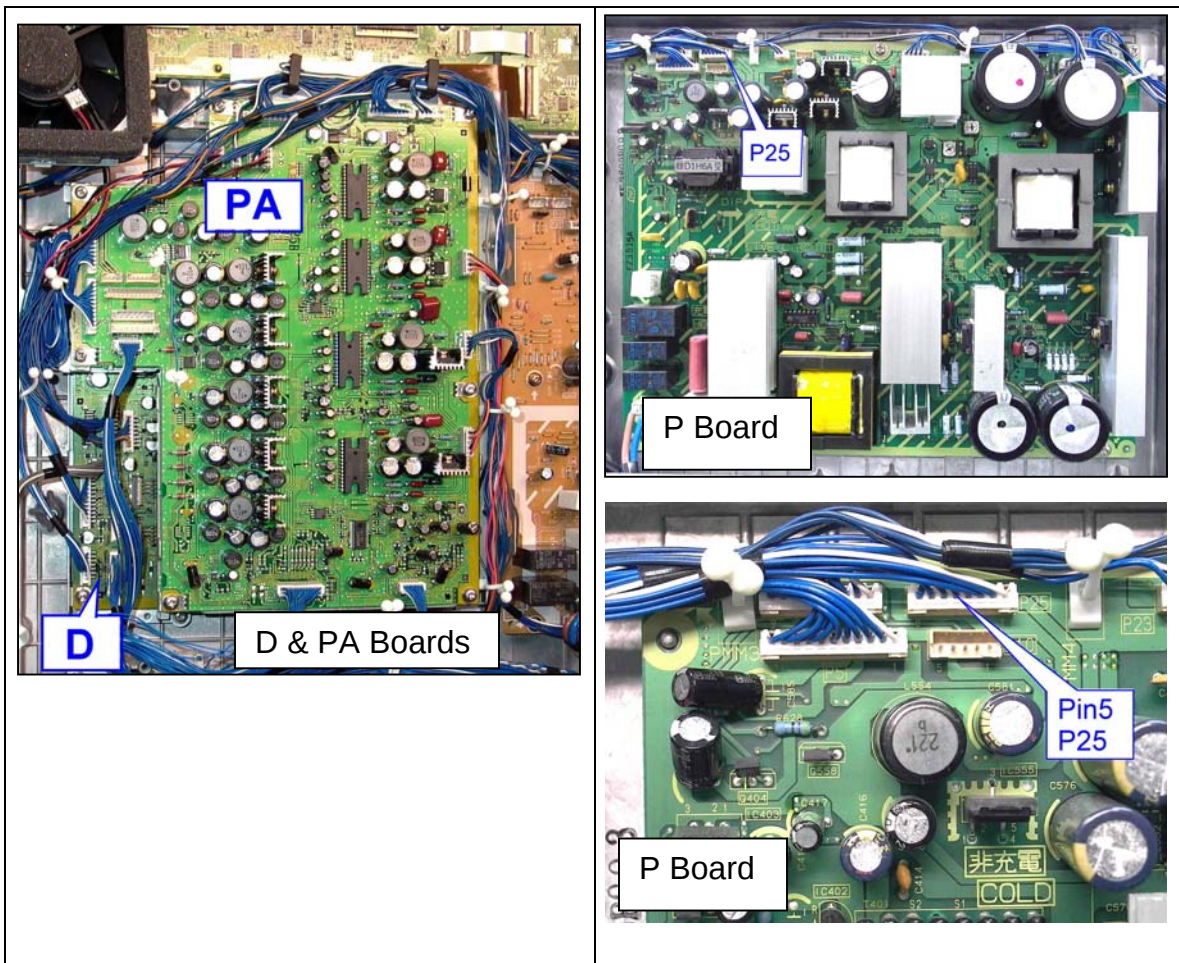
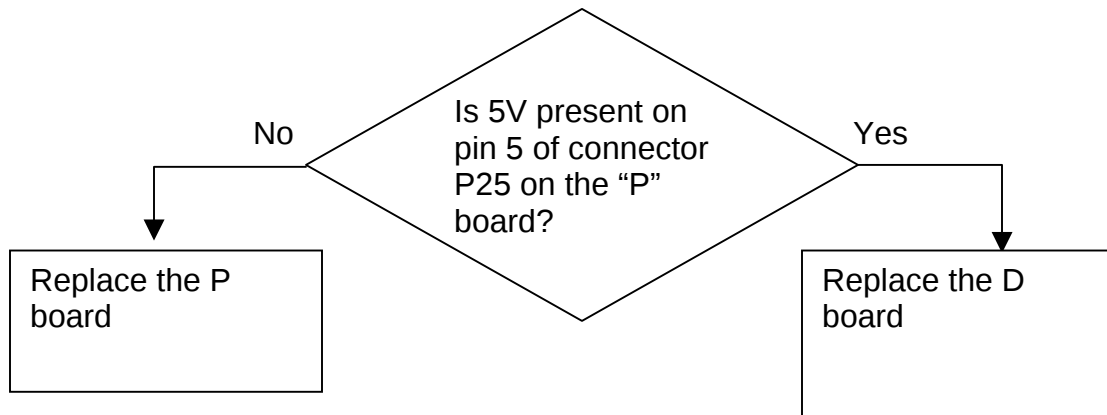
Power LED blinks 2 Times



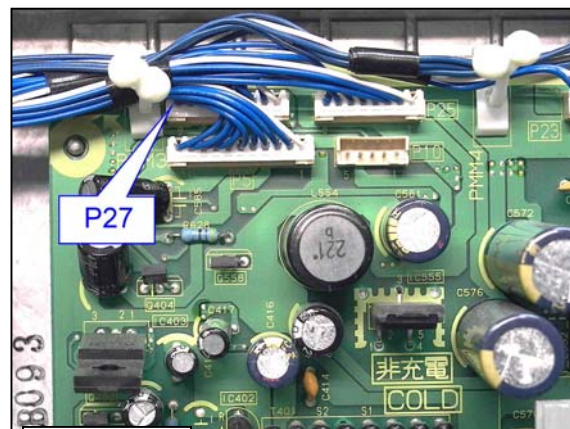
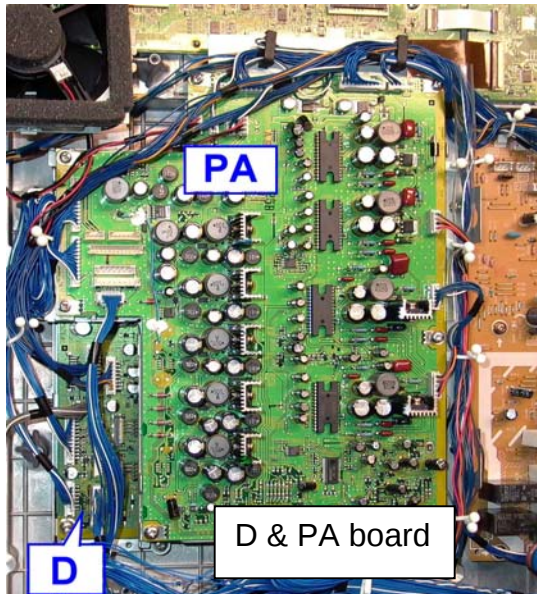
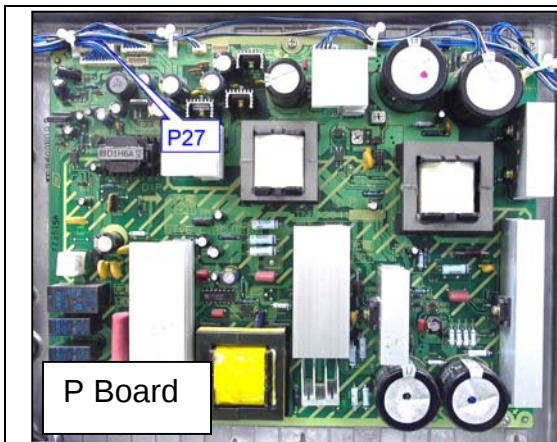
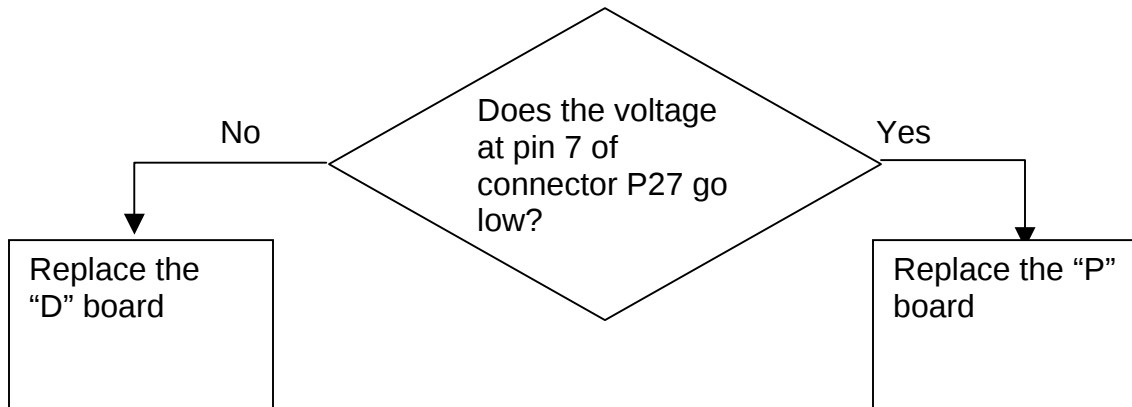
Power LED blinks 3 Times



Power LED blinks 4 Times

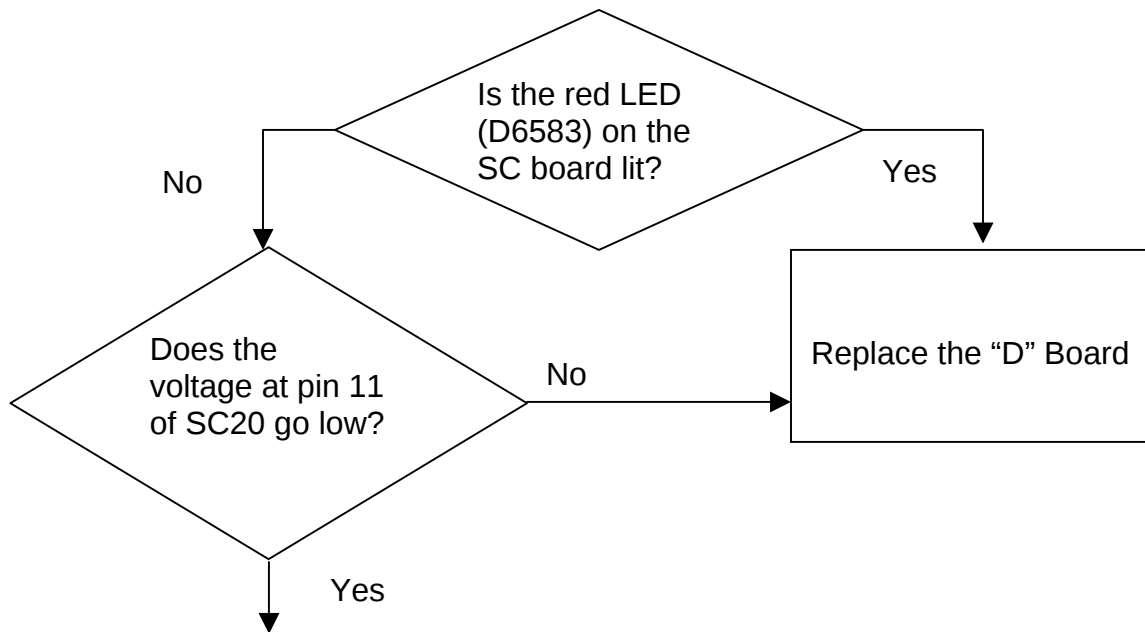


Power LED blinks 5 Times



P board

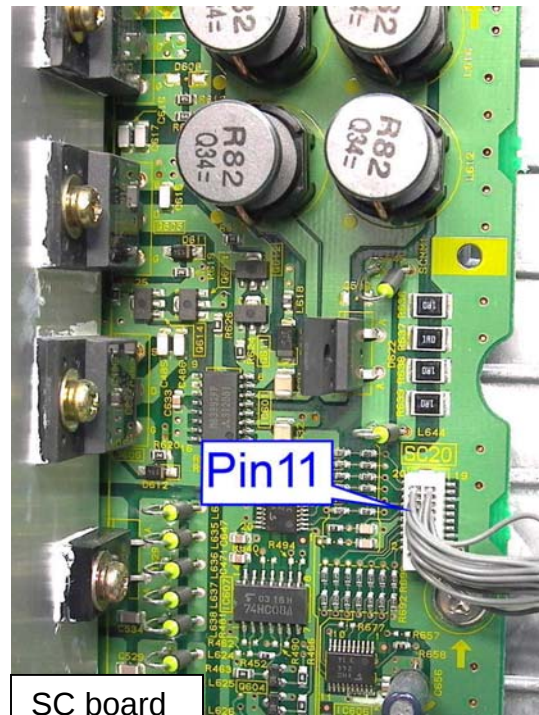
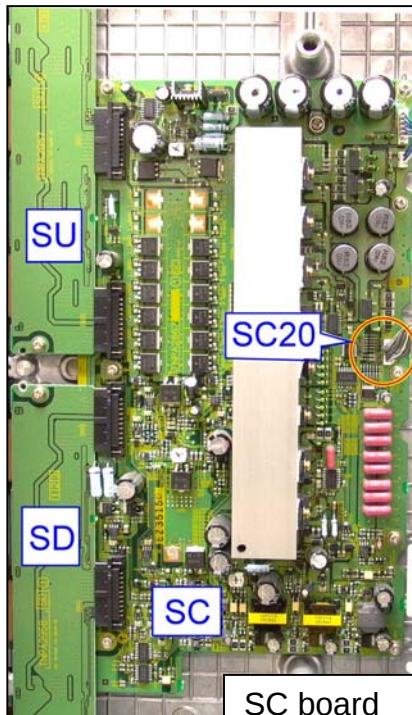
Power LED blinks 7 Times



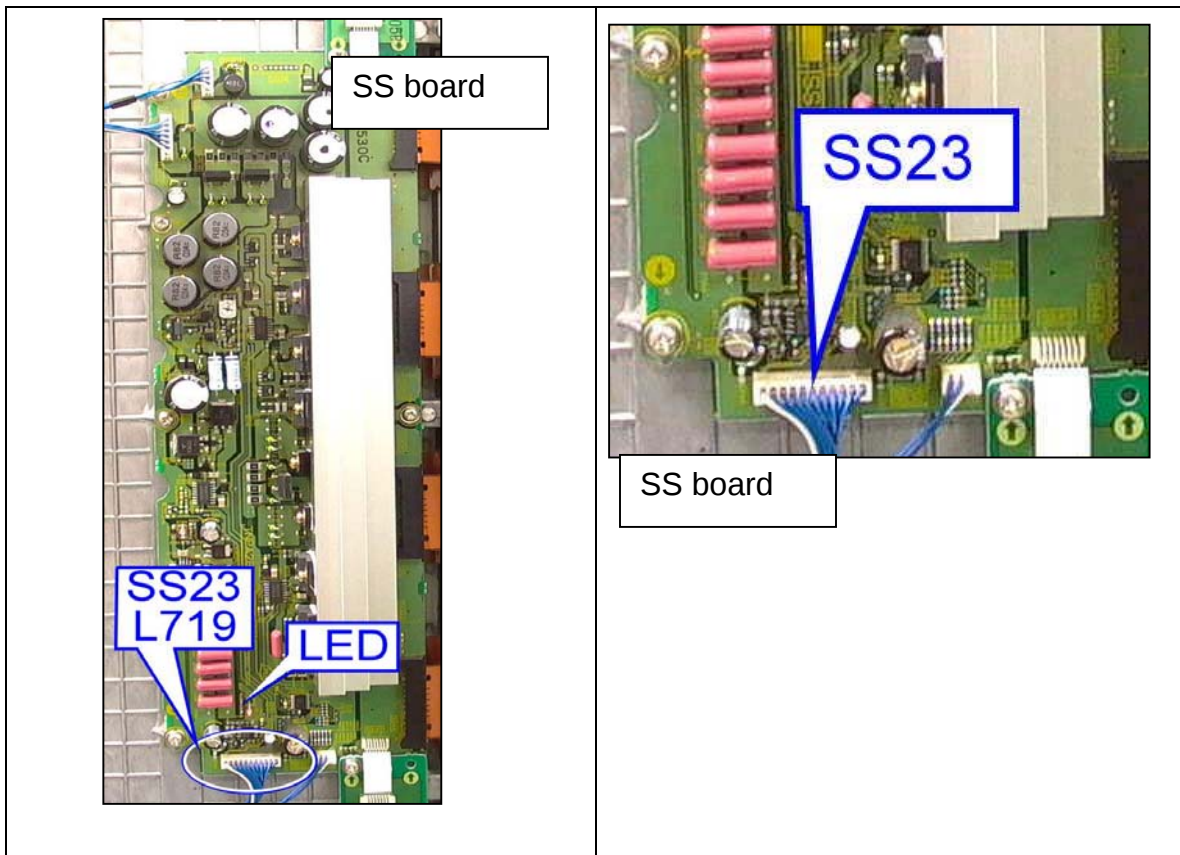
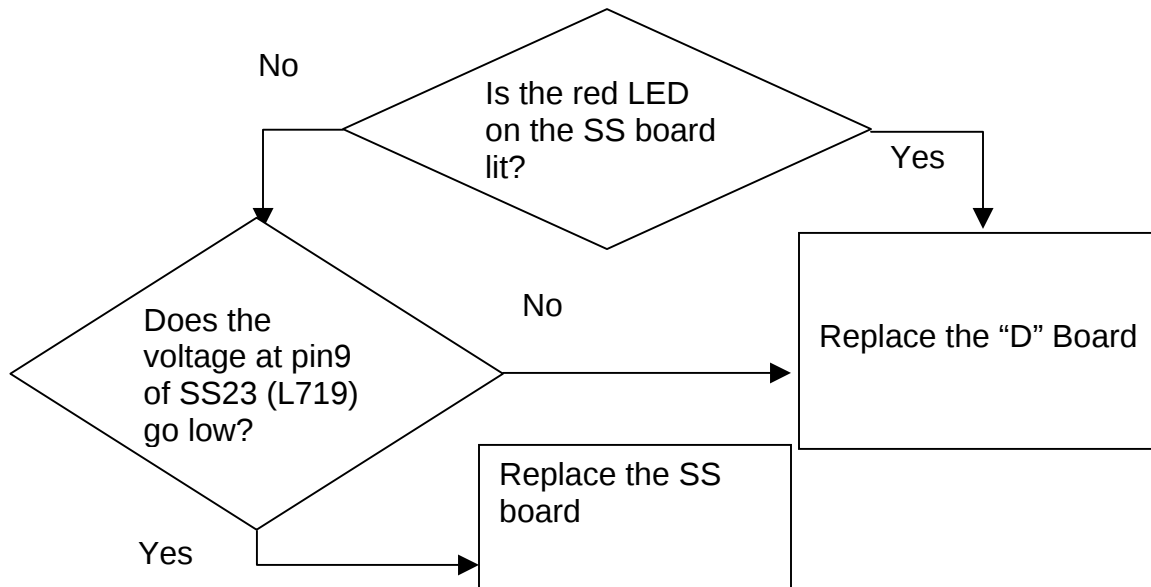
Replace the SC board.

Note: Both, the SU and the SD boards may load down the SC board. Isolate them before replacing the SC board.

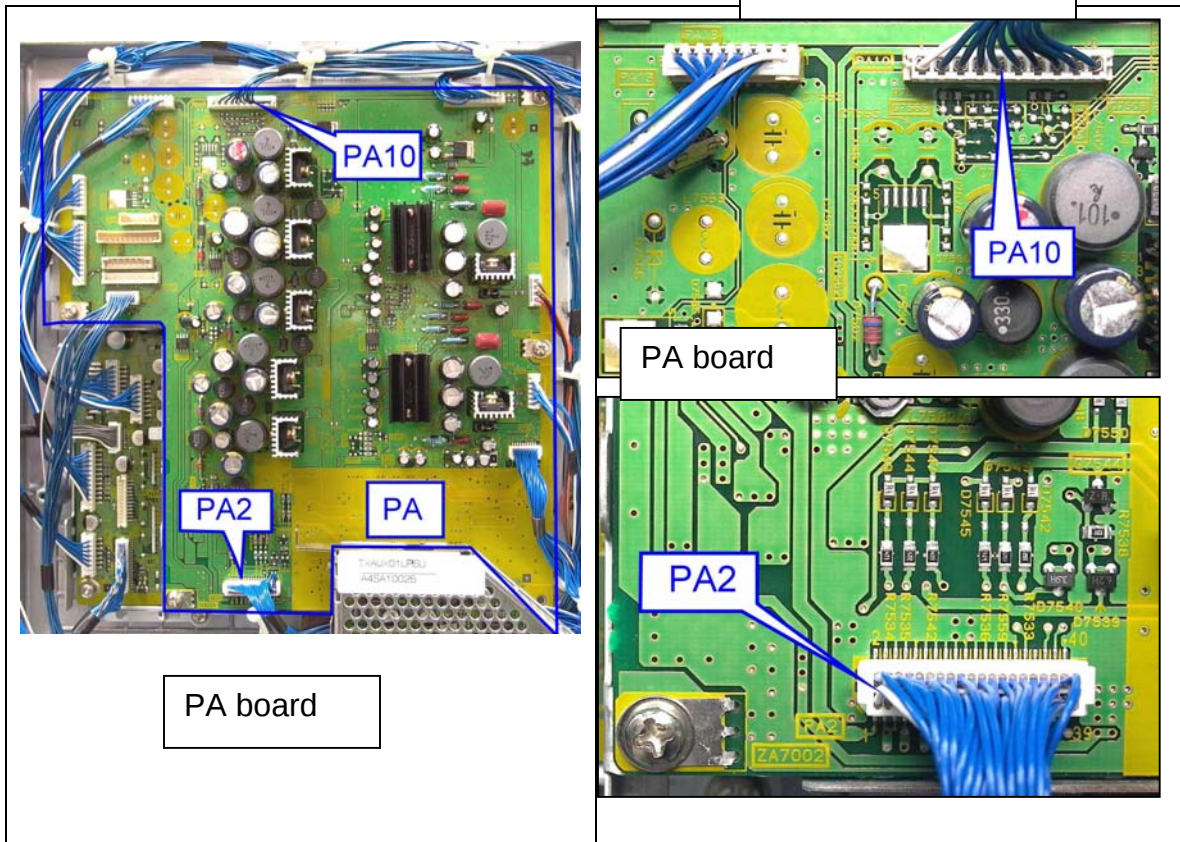
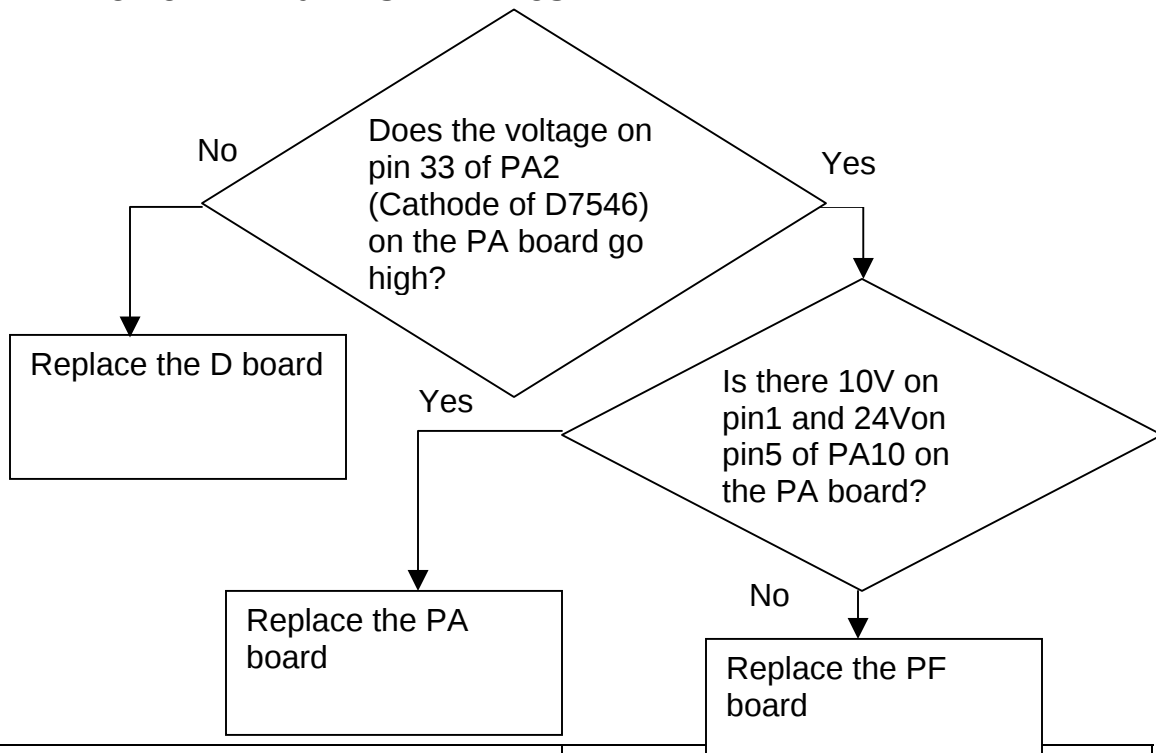
Check voltage at pin11 of SC20 using a peak-hold meter.



Power LED blinks 9 Times



Power LED blinks 12 Times



SOS Troubleshooting (TH-42PX20U)

TH-42PX20U-P Shutdown

Number of Times the Power LED Blinks	
<u>1</u>	-
<u>2</u>	SOS2 (TPSOS2 (L6604) on SC Board) (SC, D, and P boards)
<u>3</u>	3.3V SOS (D and P boards)
<u>4</u>	5V SOS (D board)
<u>5</u>	Power Supply SOS (Pin 7 of connector P27) (P and D boards)
	-
<u>7</u>	SOS1 (Scan Driver 2) TPSOS1 (L6603) on SC Board) (SC, SU, SD, and D boards)
	-
<u>9</u>	SUS Driver (TPSOS3 on "SS" Board) (SS and D boards)
	-
	-
<u>12</u>	Tuner Power (SS and D boards)
<u>13</u>	Fan SOS (Pin 6 of connector P27 on "P" Board) (Fan and D board)

Table 7

TH-42PX20U-P

Note: The numbers followed by the letter “X” within this picture indicate the number of times the “POWER” LED flashes.

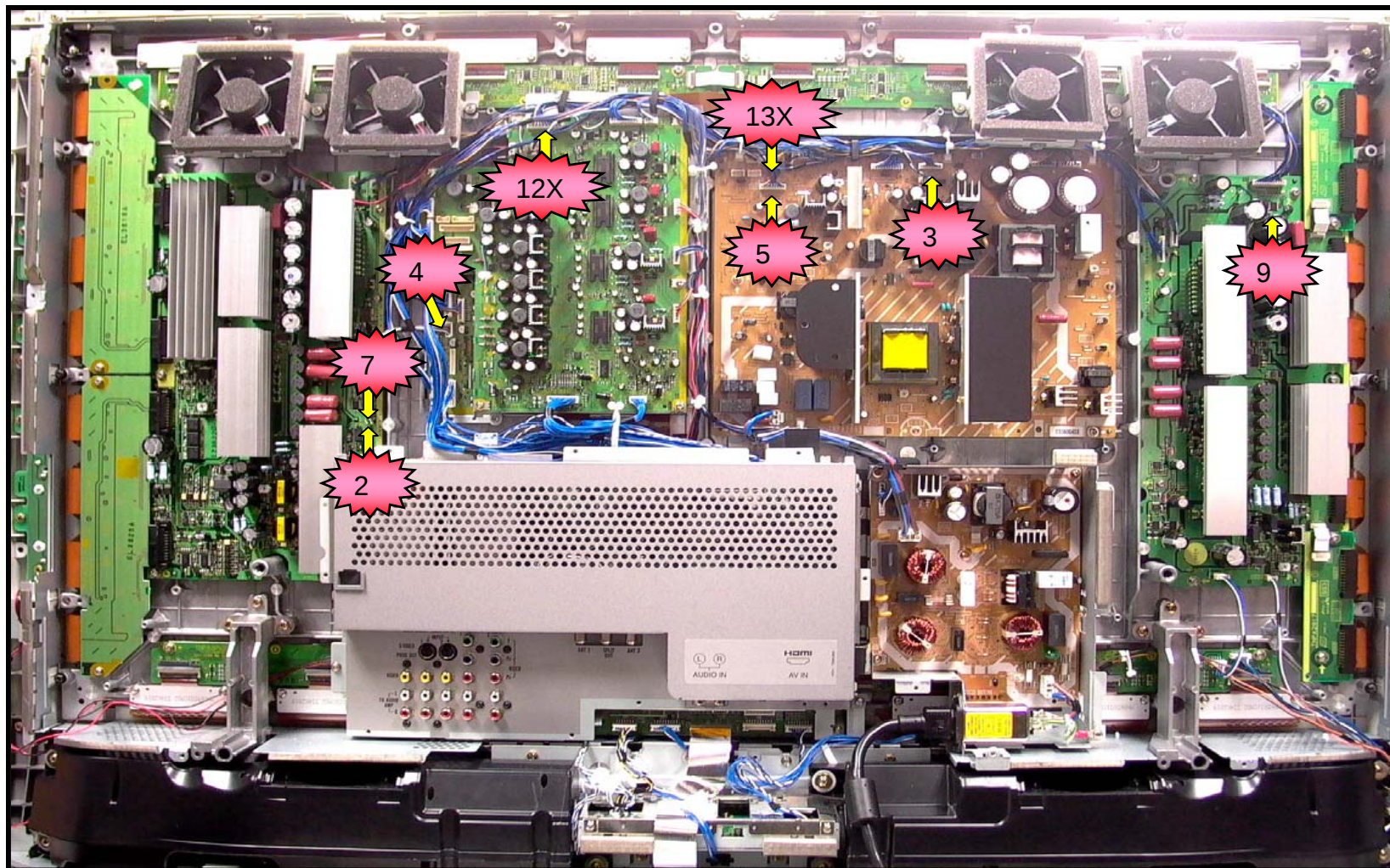
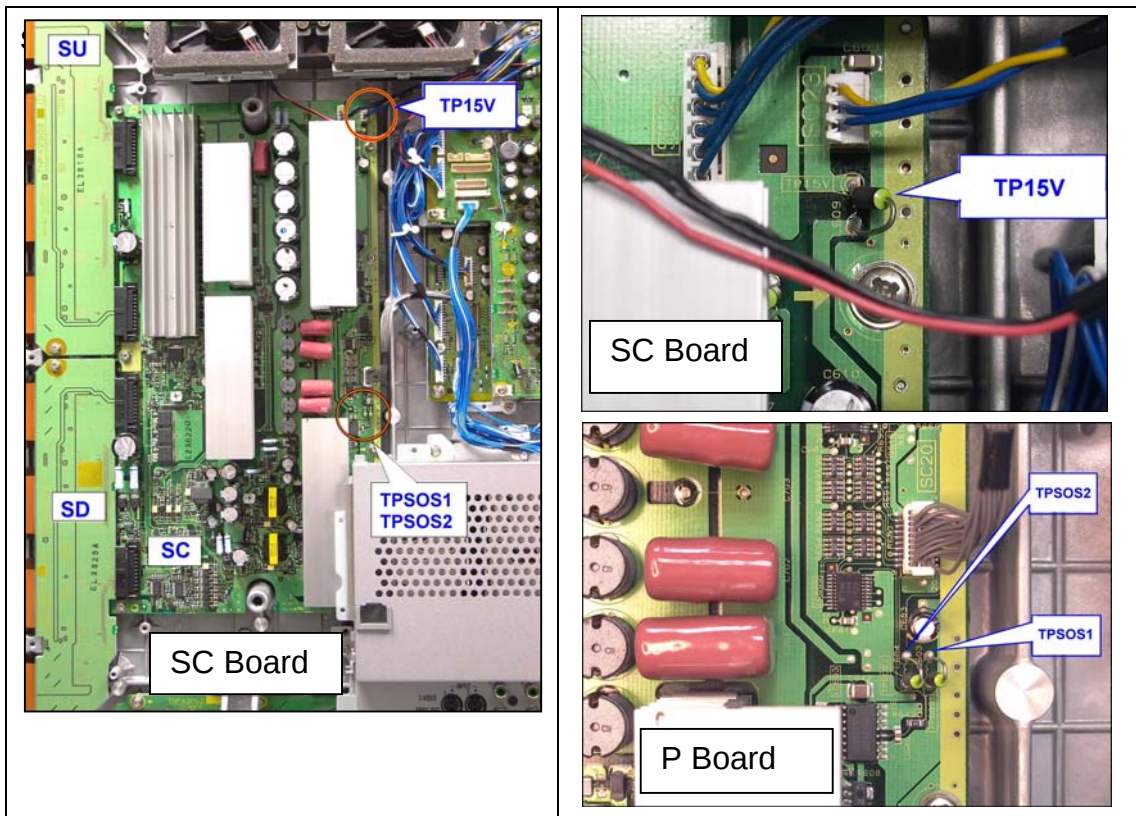
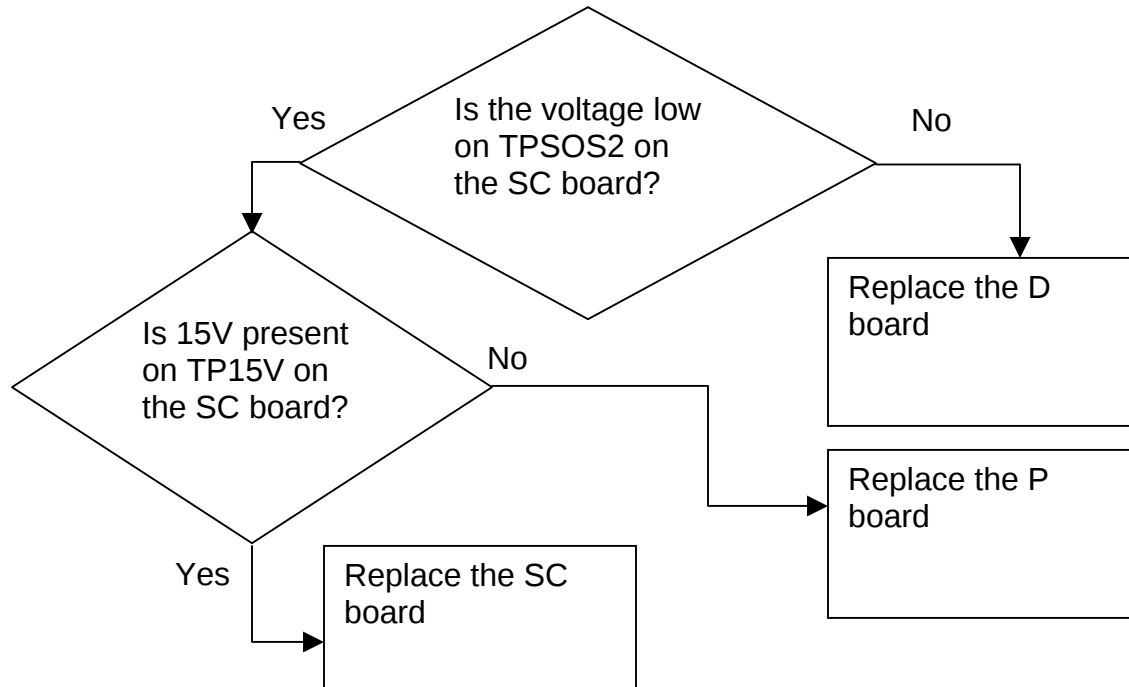


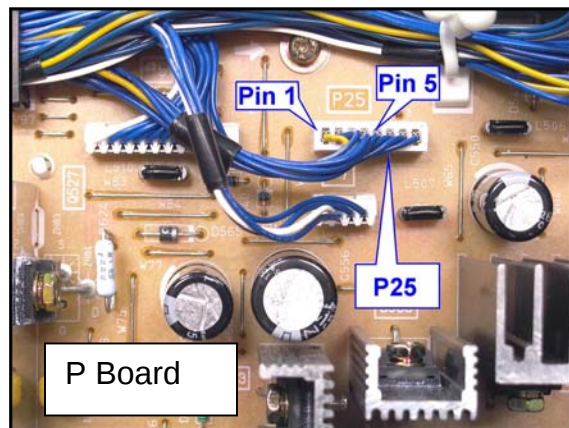
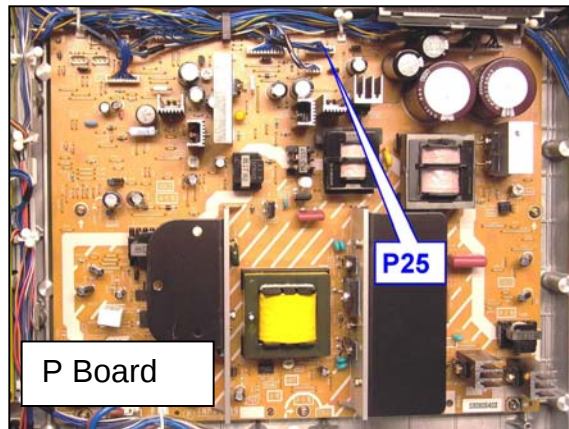
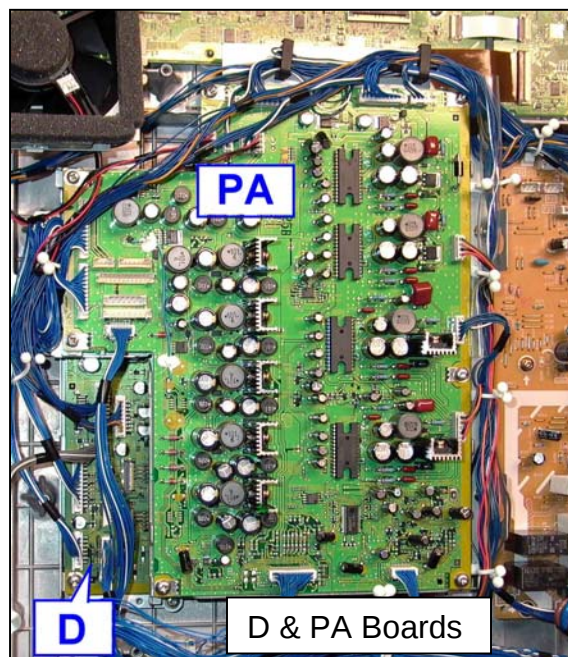
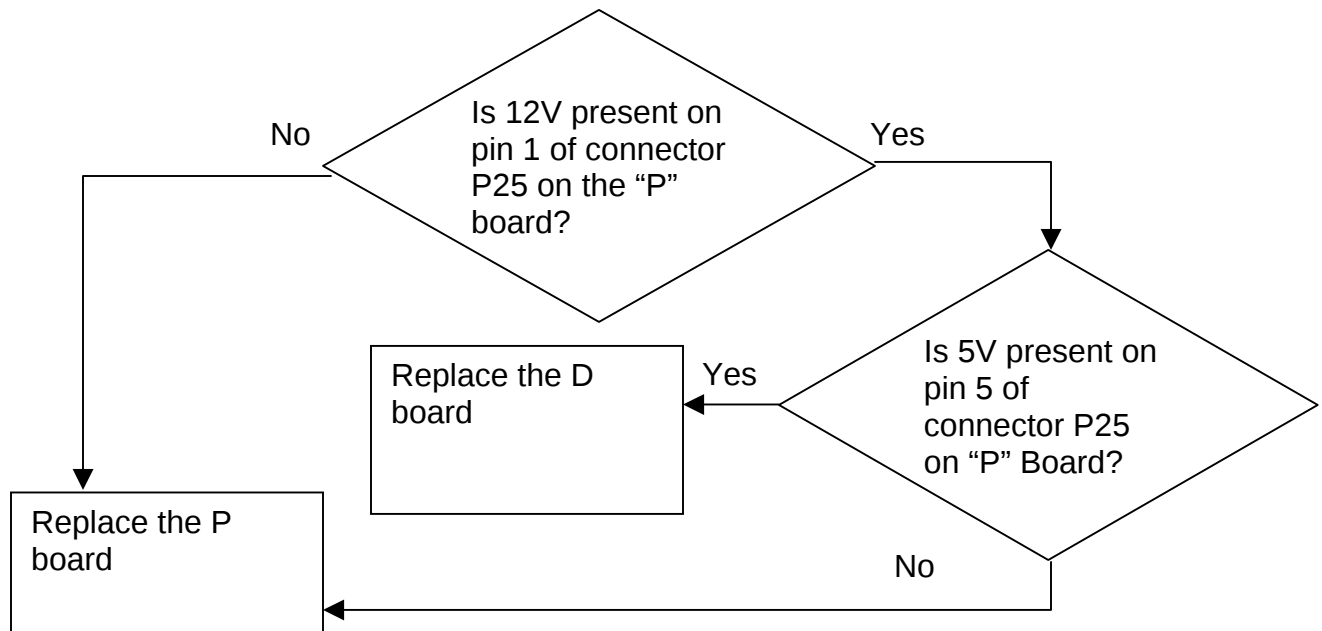
Figure 33 - TH-42PD20U

Troubleshooting chart for the TH-42PX20U

Power LED blinks 2 Times



Power LED blinks 3 Times

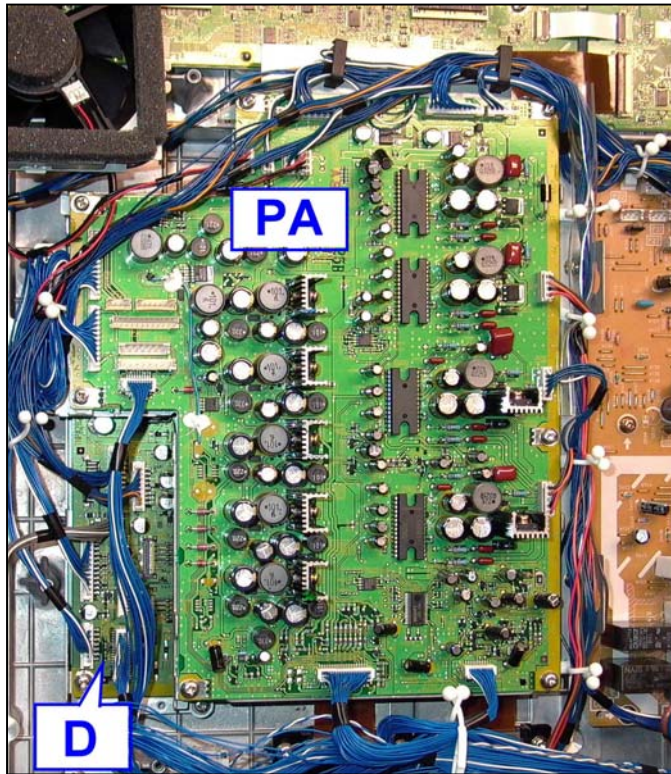


Power LED blinks 4 Times

Since, this board is located underneath the PA board, it is very difficult to get to the test point while the TV is on.

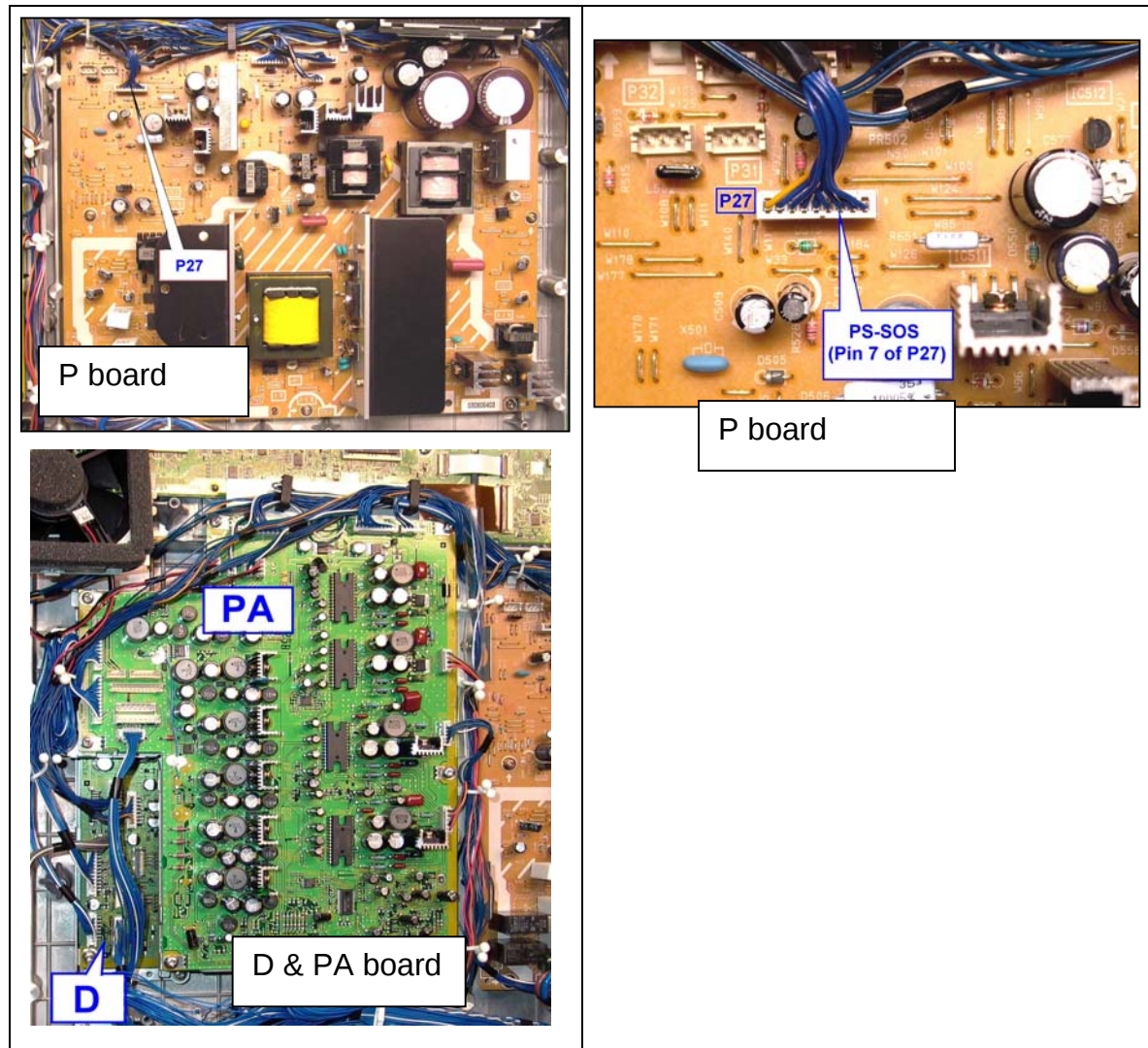
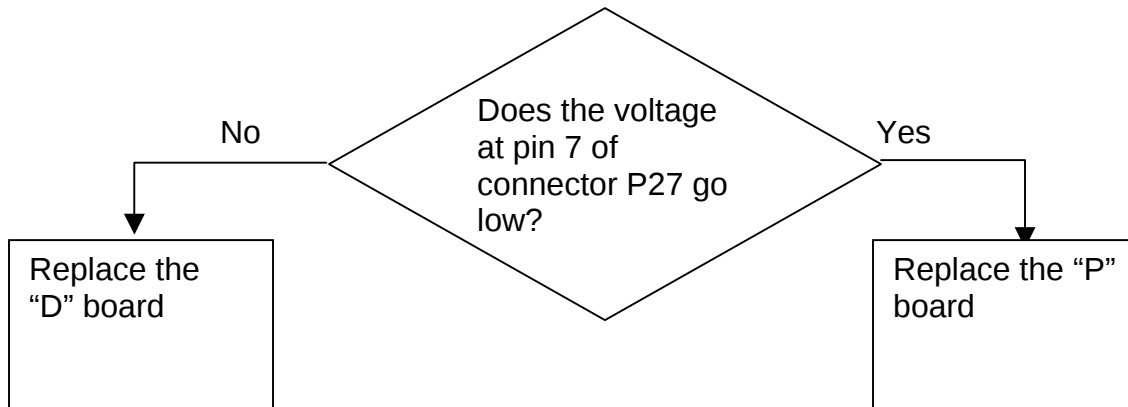
Replace the D board.

Normally this condition is triggered when the 5V line is loaded down on the D board

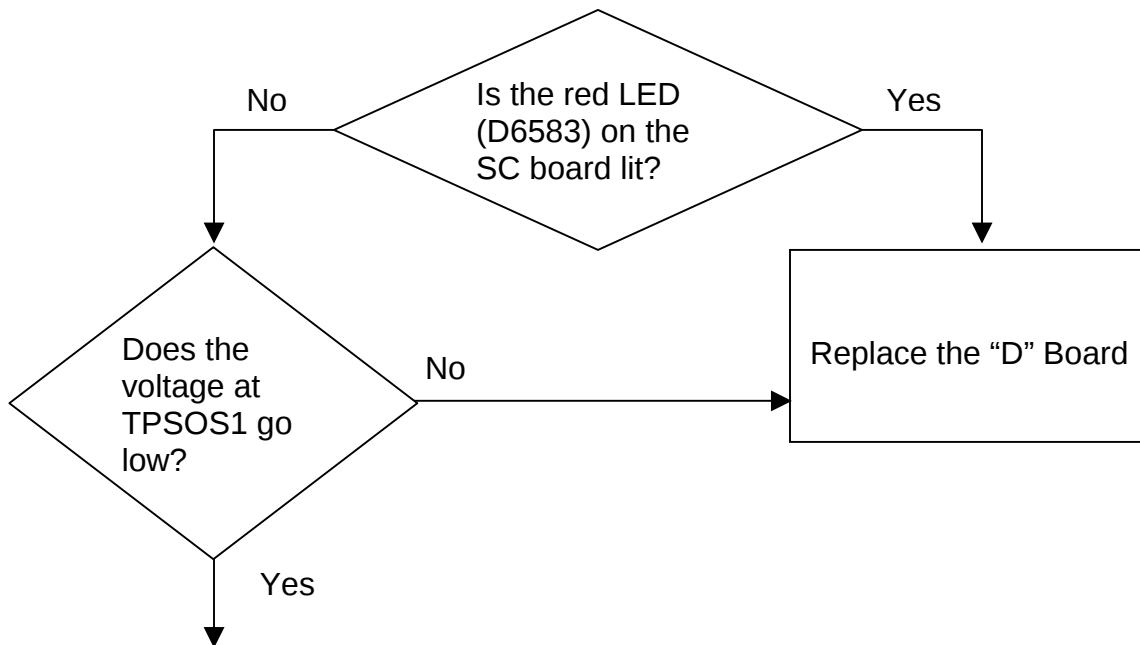


D board

Power LED blinks 5 Times

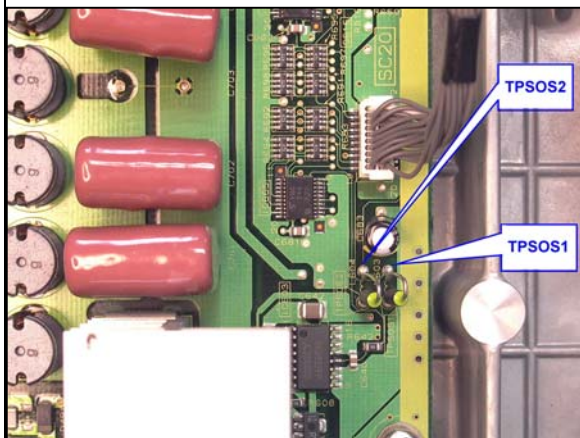
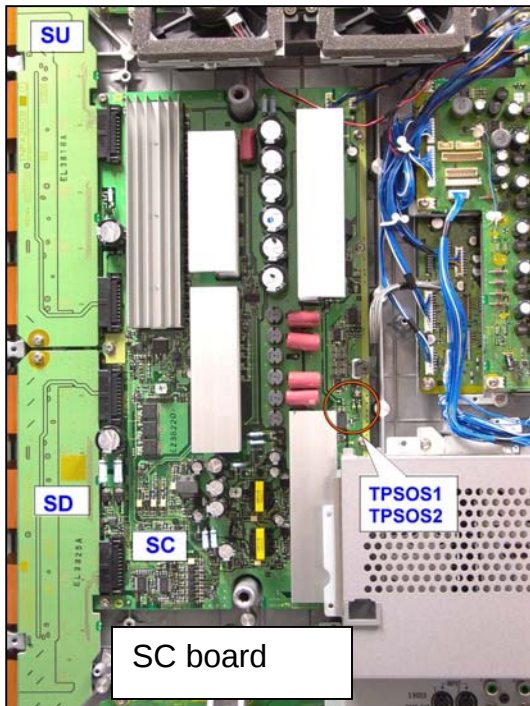


Power LED blinks 7 Times



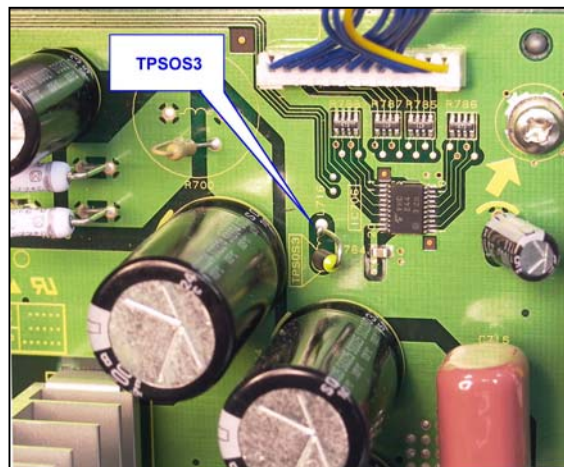
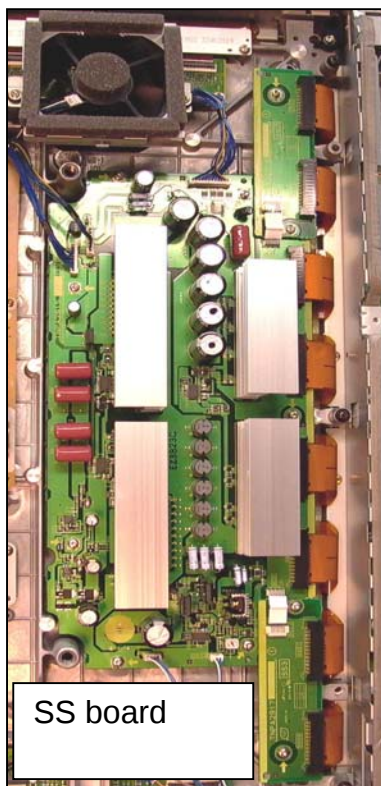
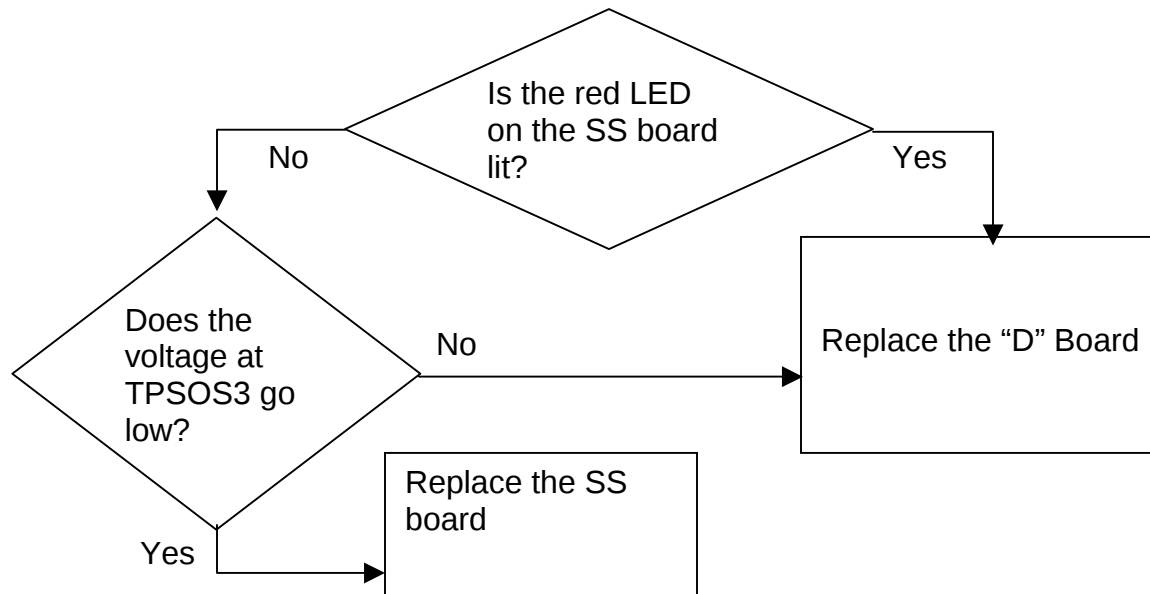
Replace the SC board.
Note: Both, the SU and the SD boards may load down the SC board. Isolate them before replacing the SC board.

Check voltage at TPSOS1 using a peak-hold meter.

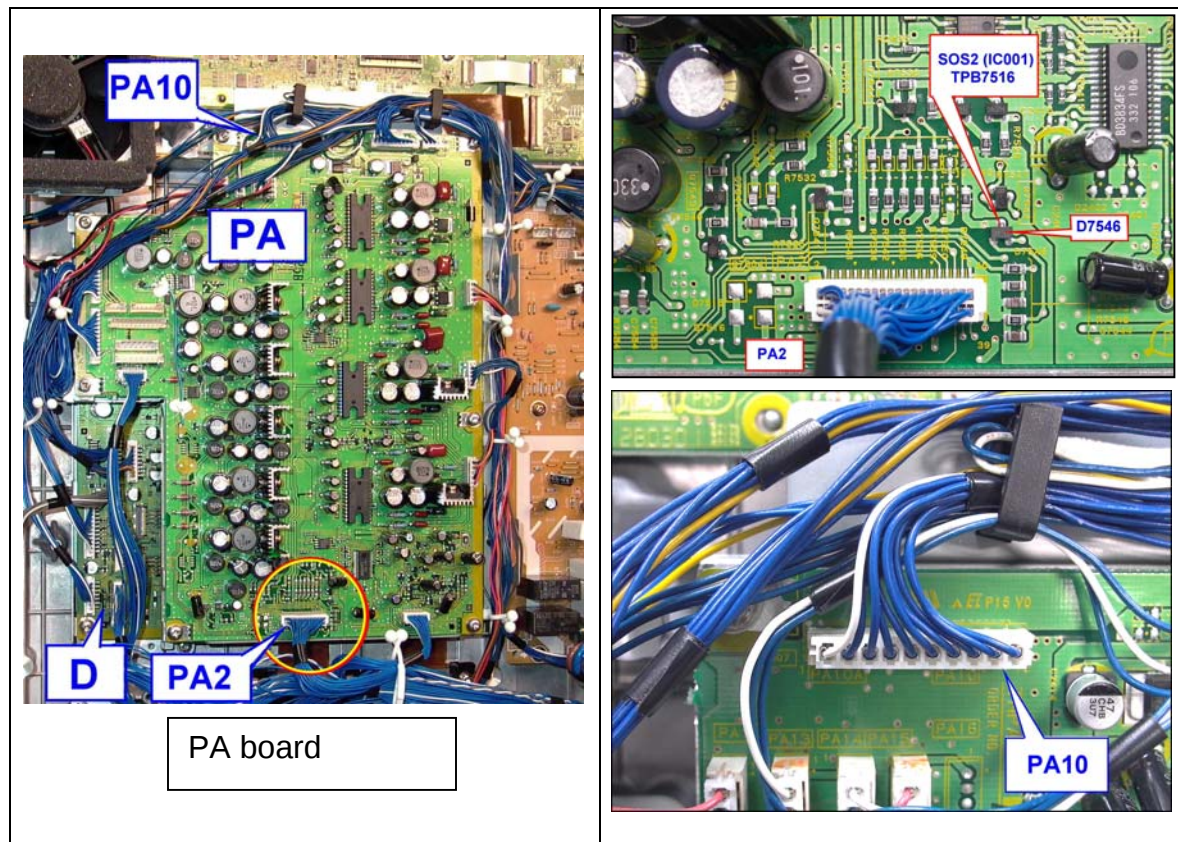
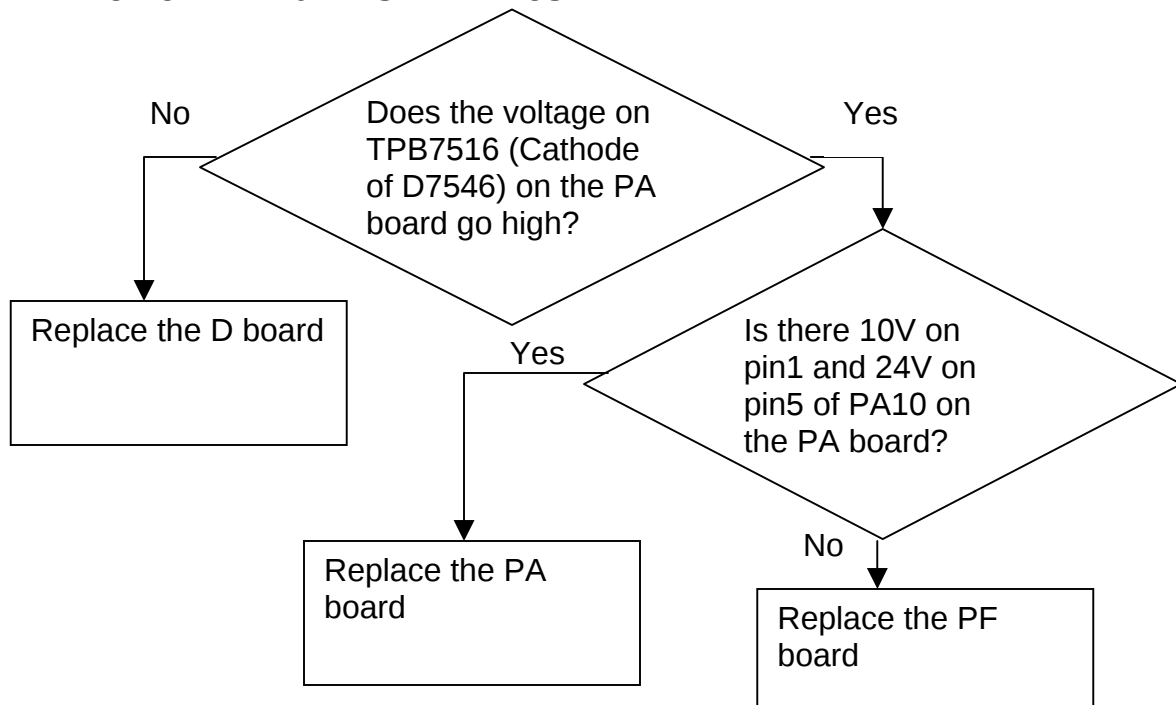


SC board

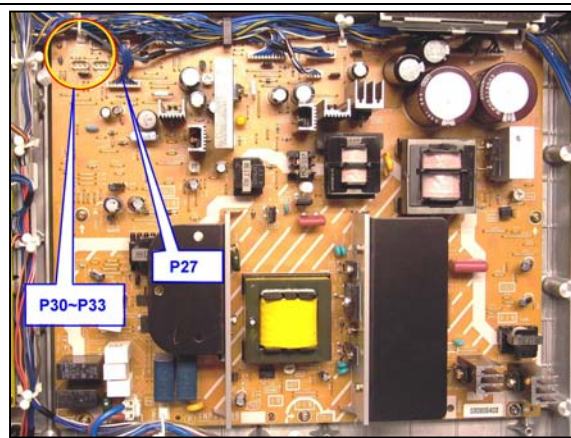
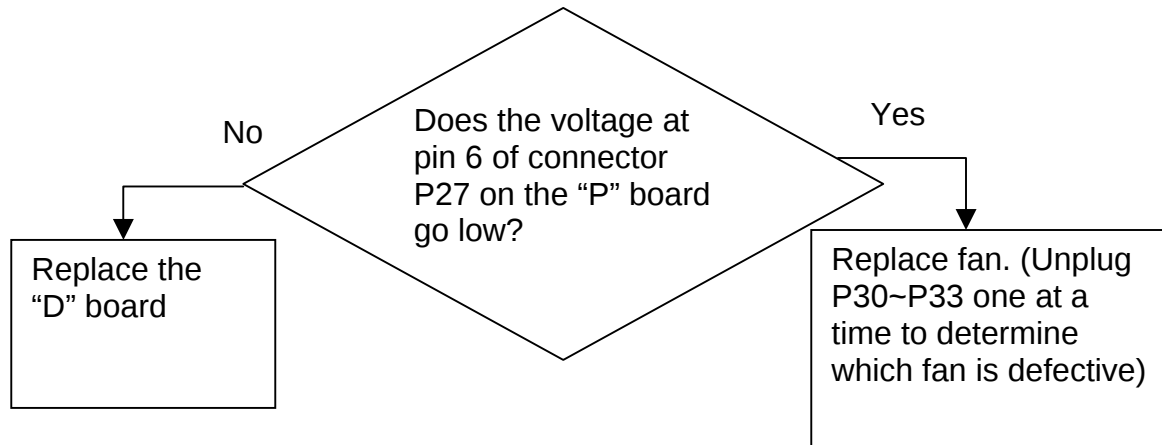
Power LED blinks 9 Times



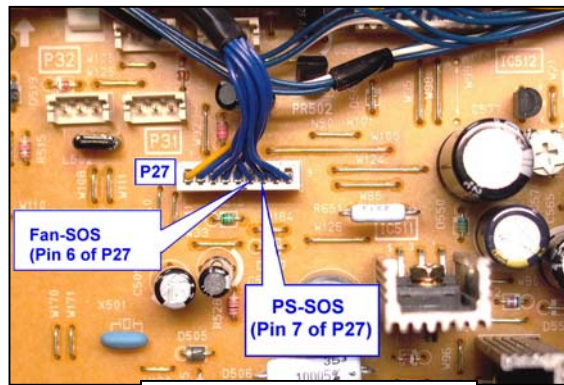
Power LED blinks 12 Times



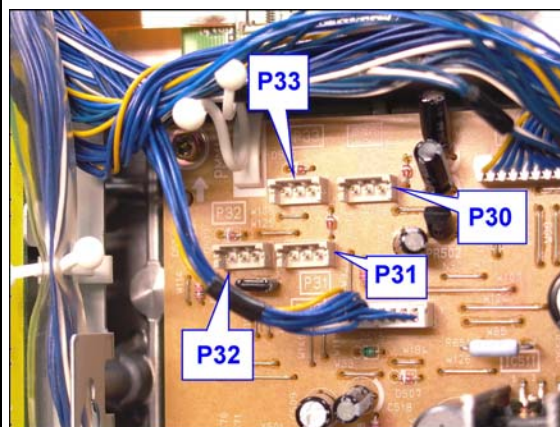
Power LED blinks 13 Times



P board



Fan SOS (P board)



P30~P33 (P board)

TH-42PX25U-P Protection Circuits

Protection circuits are incorporated in the unit to prevent the failure of a single circuit or a component from creating catastrophic damage.

A shutdown condition occurs when there is an over voltage, a short, or a drop in any of the voltage lines. Also, when the fans are drawing more current than normal the shutdown circuit is triggered.

The microprocessor IC9709 detects when a shutdown condition has been triggered.

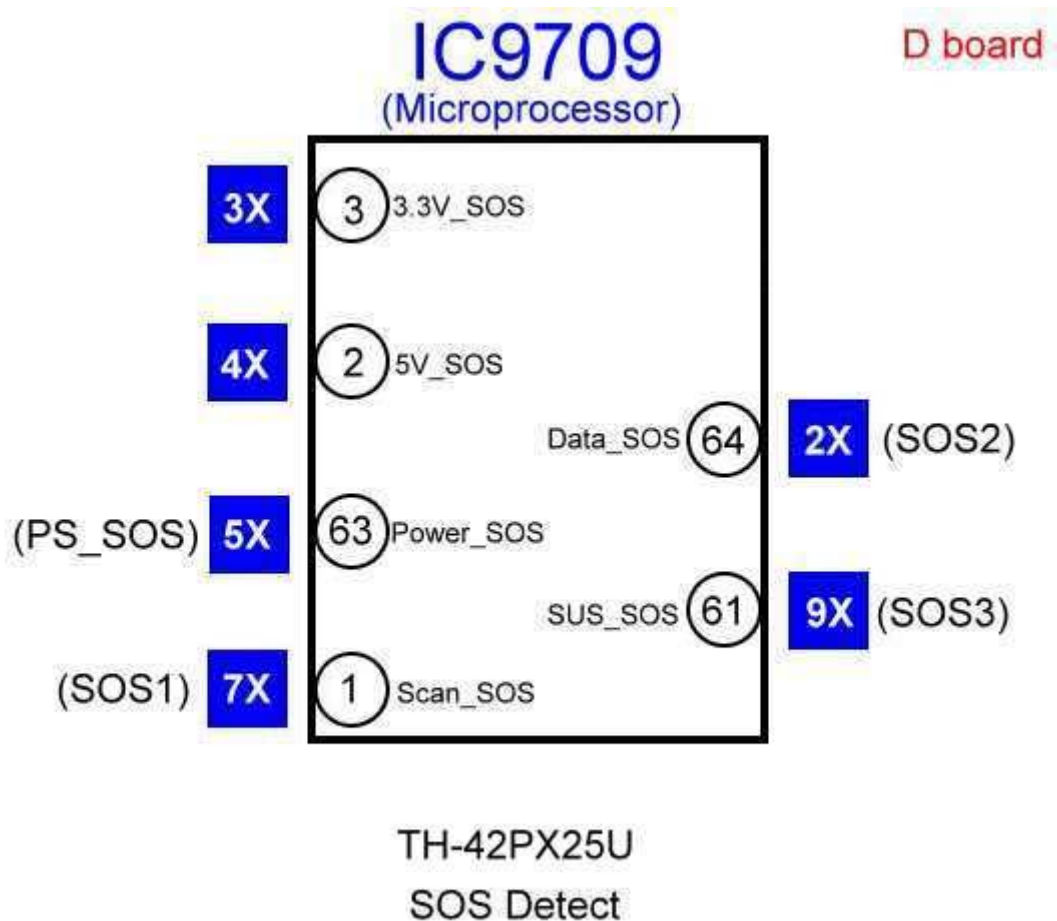


Figure 34 - TH-PX25U_SOS Detect Circuit

Power LED blinking timing chart for the TH-42PX25U-P

Number of Times the Power LED Blinks	
1	-
2	SOS2 (TPSOS2 (L6604) on SC Board)
3	3.3V SOS
4	5V SOS
5	Power Supply SOS (Pin 7 of connector P27)
6	-
7	SOS1 (Scan Driver 2) TPSOS1 (L6603) on SC Board)
8	-
9	SUS Driver (TPSOS3 on "SS" Board)
10	-
11	-
12	Tuner Power
13	Fan SOS (Pin 6 of connector P27 on "P" Board)

Table 8

TH-42PX25U PA board SOS detect

Note: This circuit is identical to the circuit used on the TH-42PX25U-P model

Transistor Q7541 on the PA board monitors the UNR24V, the UNR10V, and the +9V. If any of these supply lines develop a short circuit, transistor Q7541 goes into conduction and applies a high to pin 69 of the MPU, IC001, through pin 33 of connector PA2 on the PA board. This triggers the SOS circuit.

Transistor Q7544 monitors the +5V, and +2.5V line. If any of these supply lines increase in voltage, the transistor Q7544 goes into conduction causing its collector to go low. As a result, Q7541 conducts and applies a high to pin 69 of the MPU, IC001, through pin 33 of connector PA2 on the PA board. This triggers the SOS circuit.

The main +9V, the VD1+5V, the main 5V, and the main +2.5V are also monitored for a drop in voltage. A decrease in any of these two supply lines forces the respective diode to conduct and trigger Q7542. A high is applied to pin 69 of the MPU, IC001, through pin 33 of connector PA2 on the PA board. This triggers the SOS circuit.

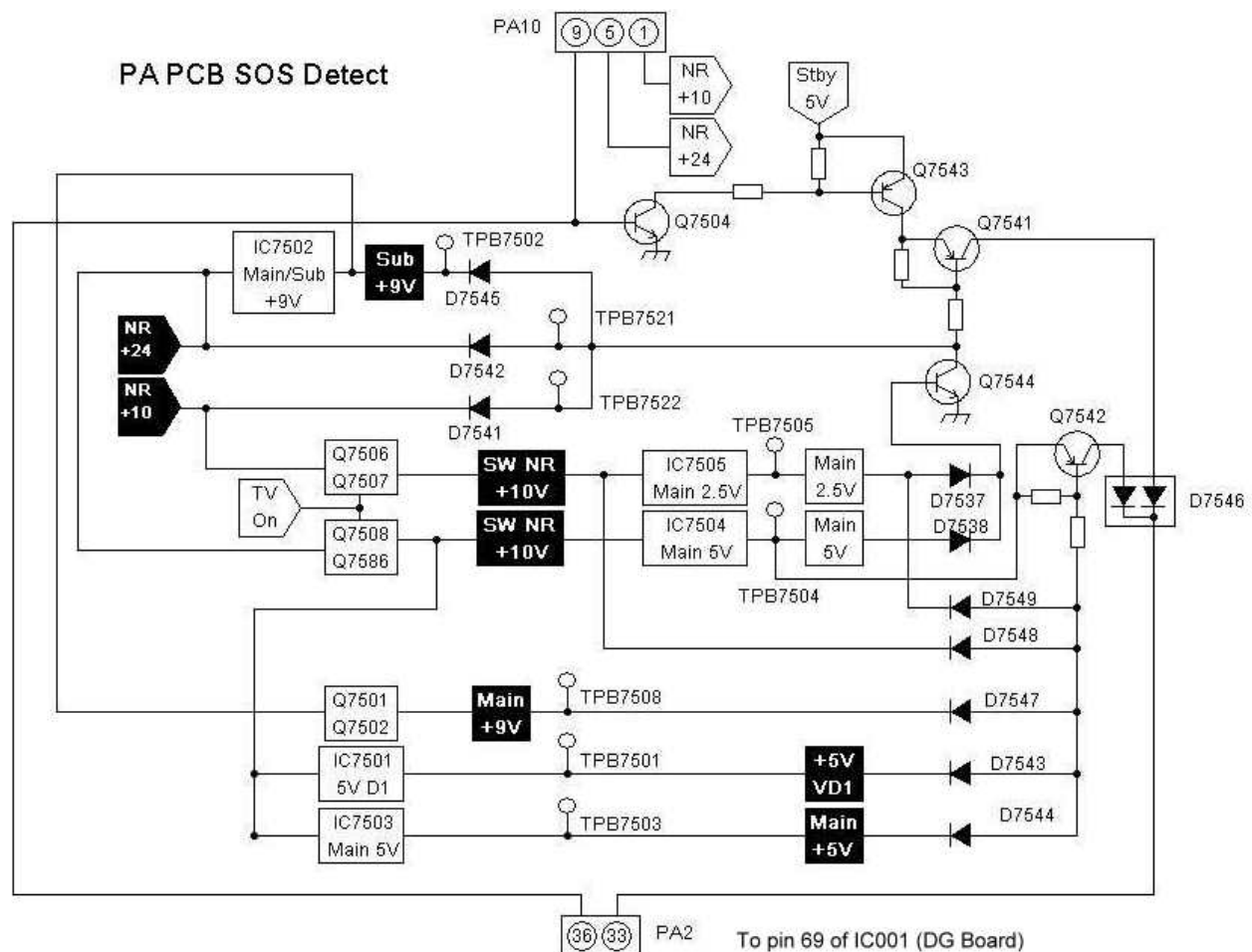


Figure 35 - TH-42PX25U PA board SOS detect

TH-42PX25U 3.3V SOS detect

Pin 2 of the Microprocessor IC9709 on the D board, monitors the 1.8V_S, the 1.8V, and the 3.3V generated on the D board. It also monitors the P12V (Unregulated. 14V) generated on the P board. The 12V(Unregulated. 14V) from the P board is connected to pin 1 and pin 2 of connector D25.

If the voltage in any of these lines drops, the SOS circuit is triggered.

Under normal conditions, the voltage drop derived from the voltage divider circuits at the base of Q9714, Q9717, or Q9716 is enough to turn the transistor on. However should the voltage drop at the base of any of these transistors decrease, the transistor is turned off. This allows the 5 volts at their collectors to forward bias transistor Q9715. This effectively grounds pin 3 of the CPU (IC9709) on the D board, triggering the shutdown circuit.

Under normal condition, pin 3 of IC9709 is set to high.

TH-42PX25U 5V SOS Detect Circuit (D board)

Pin 2 of the Microprocessor IC9709 on the D board, monitors the P5V from the P board

If there is a short or the voltage goes low, the voltage drop derived from the voltage divider circuit goes low and the SOS circuit is triggered.

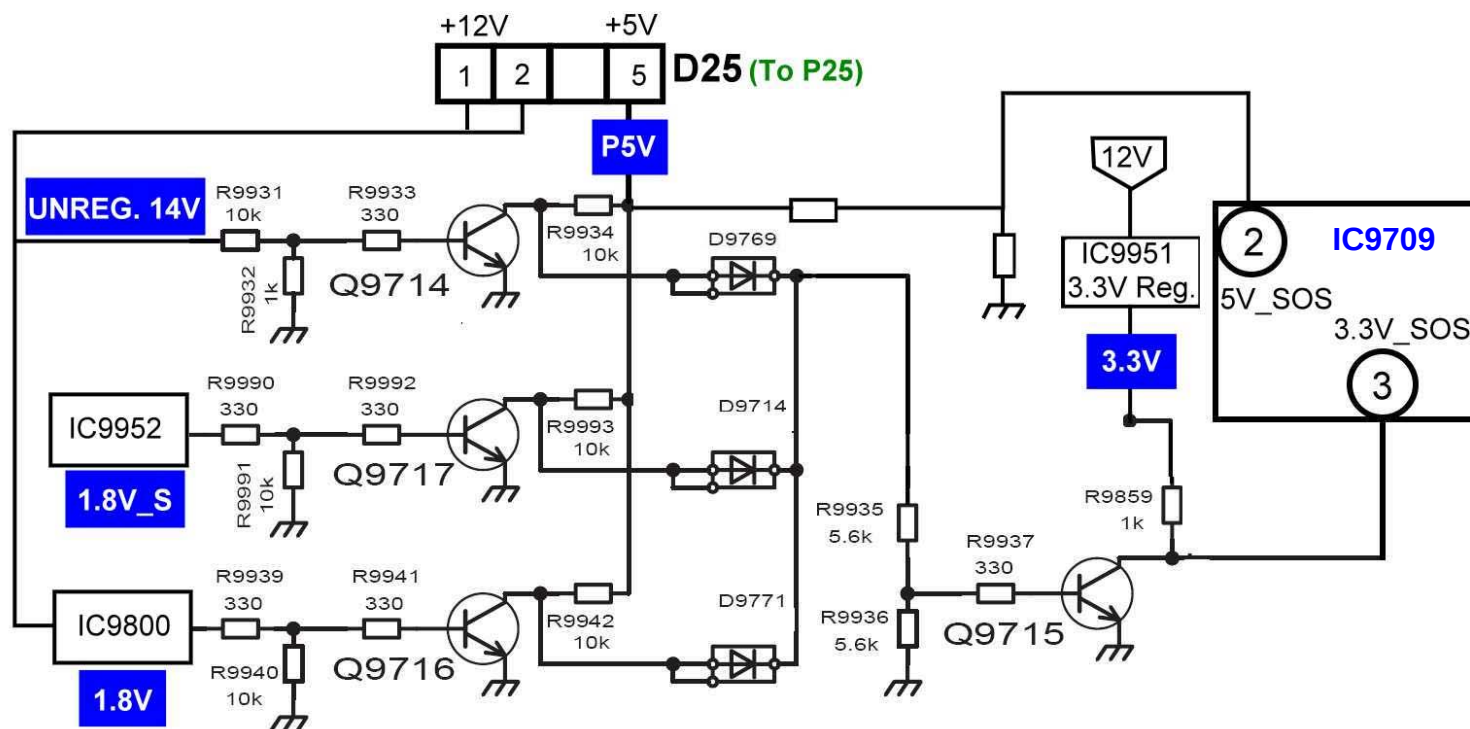


Figure 36 - TH-42PX25U 3.3V_SOS_5V_SOS detect

TH-42PX25U SC and SS SOS Detect

The Scan and Sustain voltages on the SC and SS boards are monitored in a similar manner. The +15V Line on the SS board is fed to a voltage divider and the result is compared to a reference voltage. The reference voltage is provided by a zener diode. If the output of the comparator goes high, a transistor turns on, effectively grounding the SOS line. The SC board uses a similar circuit.

Additionally, the SS and SC boards contain LED indicators to alert the technician when a problem exists. The LED should be lit during normal operation, a dark LED indicates that a problem exists on that board.

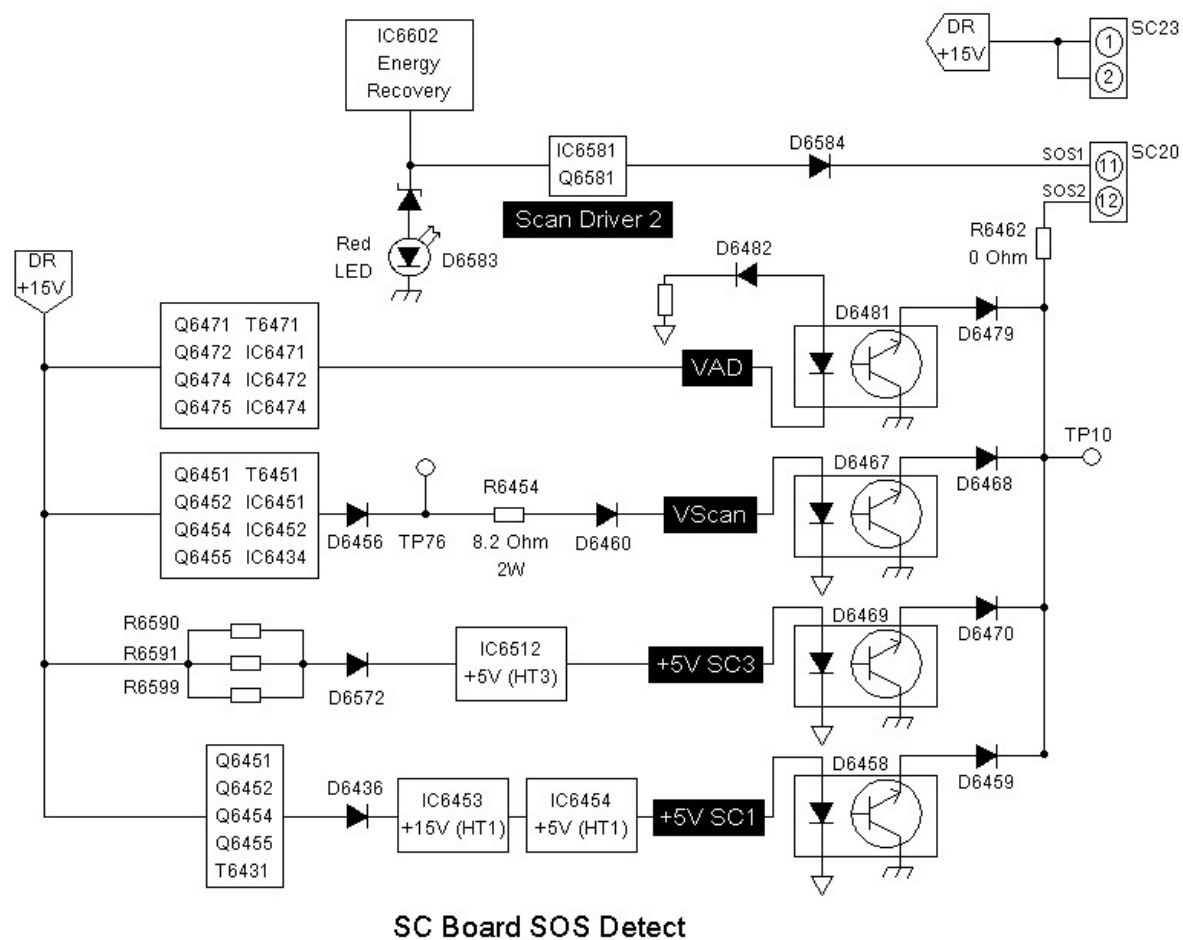


Figure 37 - SOS1 and SOS2 Detect

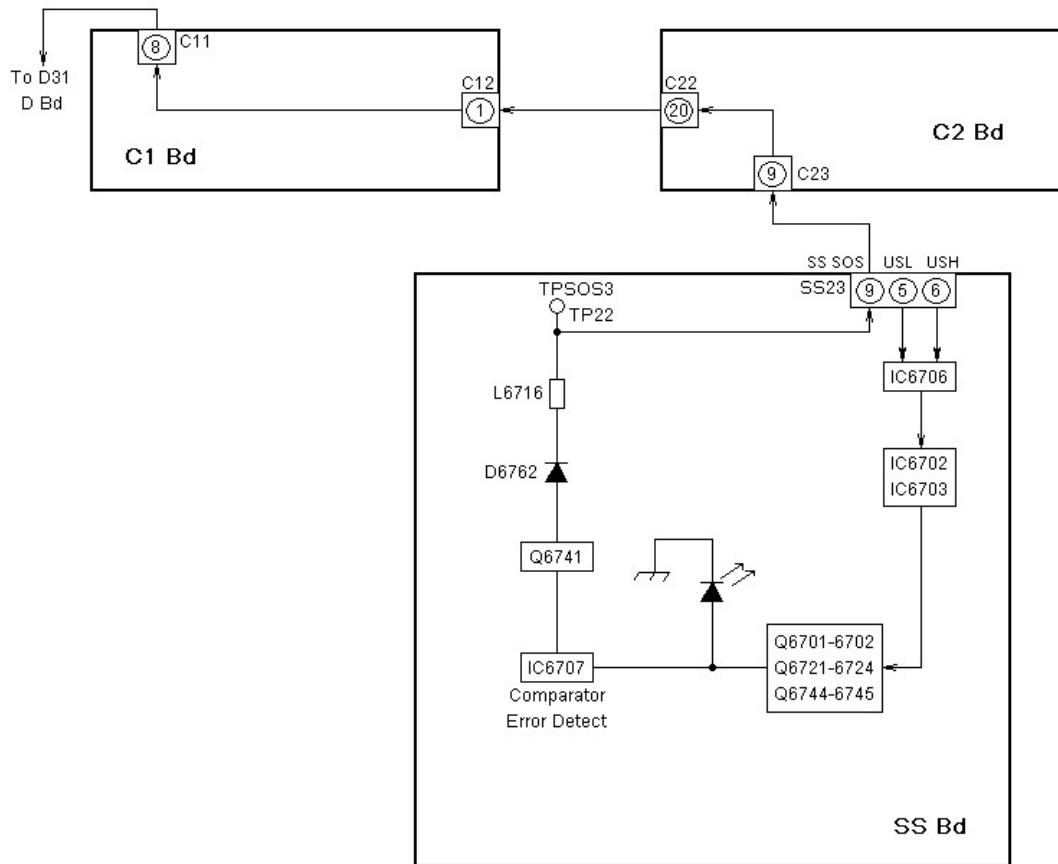


Figure 38 - SS-SOS Detect

TH-42XVS30 Protection Circuits

Protection circuits are incorporated in the unit to prevent the failure of a single circuit or a component from creating catastrophic damage.

A shutdown condition occurs when there is an over voltage, a short or a drop in any of the voltage lines. Also, when the fans are drawing more current than normal the shutdown circuit is triggered.

The microprocessor IC9003 detects when a shutdown condition has been triggered.

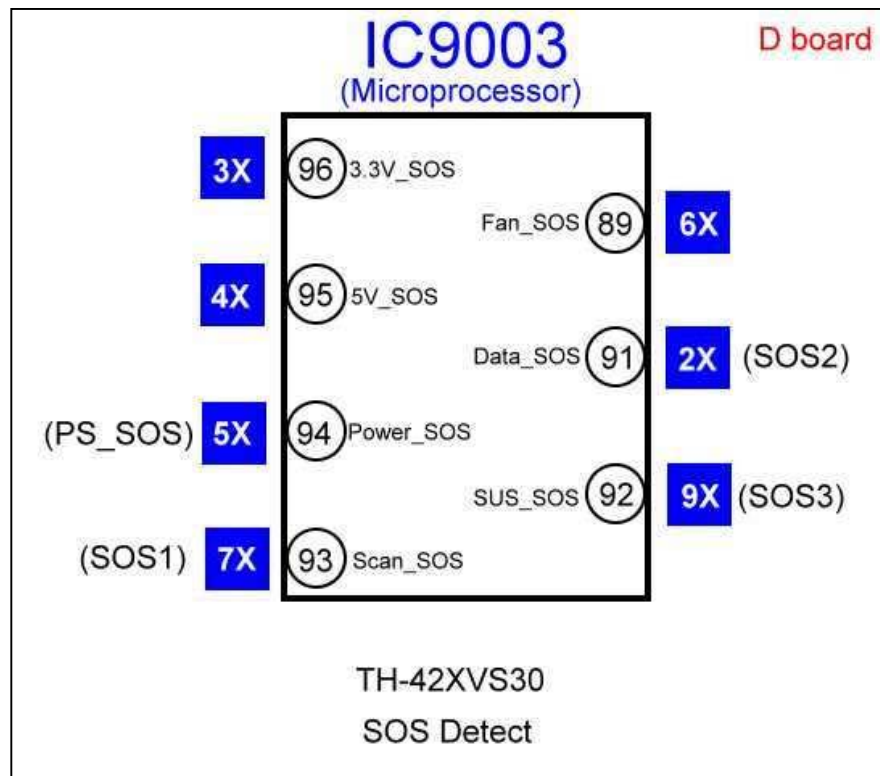


Figure 39 - SOS Detect Circuit

When an abnormality has occurred, the unit protection circuit operates and the TV is reset to the stand-by mode. At this time, the defective block can be identified by the number of blinks of the POWER LED on the front of the unit.

The following table identifies the areas where a problem is suspected according to the number of times that the POWER LED blinks.

Power LED blinking timing chart for the TH-42XVS30

Number of Times the Power LED Blinks	
1	-
2	SOS2 (TPSOS2 (L6604) on SC Board)
3	3.3V SOS
4	5V SOS
5	Power Supply SOS (Pin 7 of connector P27)
6	Fan SOS -
7	SOS1 (Scan Driver 2) TPSOS1 (L6603) on SC Board)
8	-
9	SUS Driver (TPSOS3 on "SS" Board)
12	Tuner Power

Table 9

TH-42XVS30 3.3V SOS Detect circuit (D board)

Pin 96 of the Microprocessor IC9300 on the D board monitors the 1.5V1, the 1.5V2, and the 3.3V generated on the D board. It also monitors the P12V generated on the P board. The 12V from the P board is connected to pin 1 and pin 2 of connector D25.

If the voltage in any of these lines drops, the SOS circuit is triggered.

Under normal conditions, the voltage drop derived from the voltage divider circuits at the base of Q9003, Q9004, Q9005, or Q9006 is enough to turn the transistor on. However, if the voltage drop at the base of any of these transistors decreases, the transistor is turned off. This allows the 5 volts at their collectors to forward bias transistor Q9009. This effectively grounds pin 96 of the CPU (IC9003) on the D board, triggering the shutdown circuit.

Under normal conditions, pin 96 of IC9003 is set to high.

TH-42XVS30 5V SOS Detect Circuit (D board)

Pin 95 of the Microprocessor IC9003 on the D board monitors the P5V from the P board.

If there is a short or the voltage goes low, the voltage drop derived from the voltage divider circuit goes low and the SOS circuit is triggered.

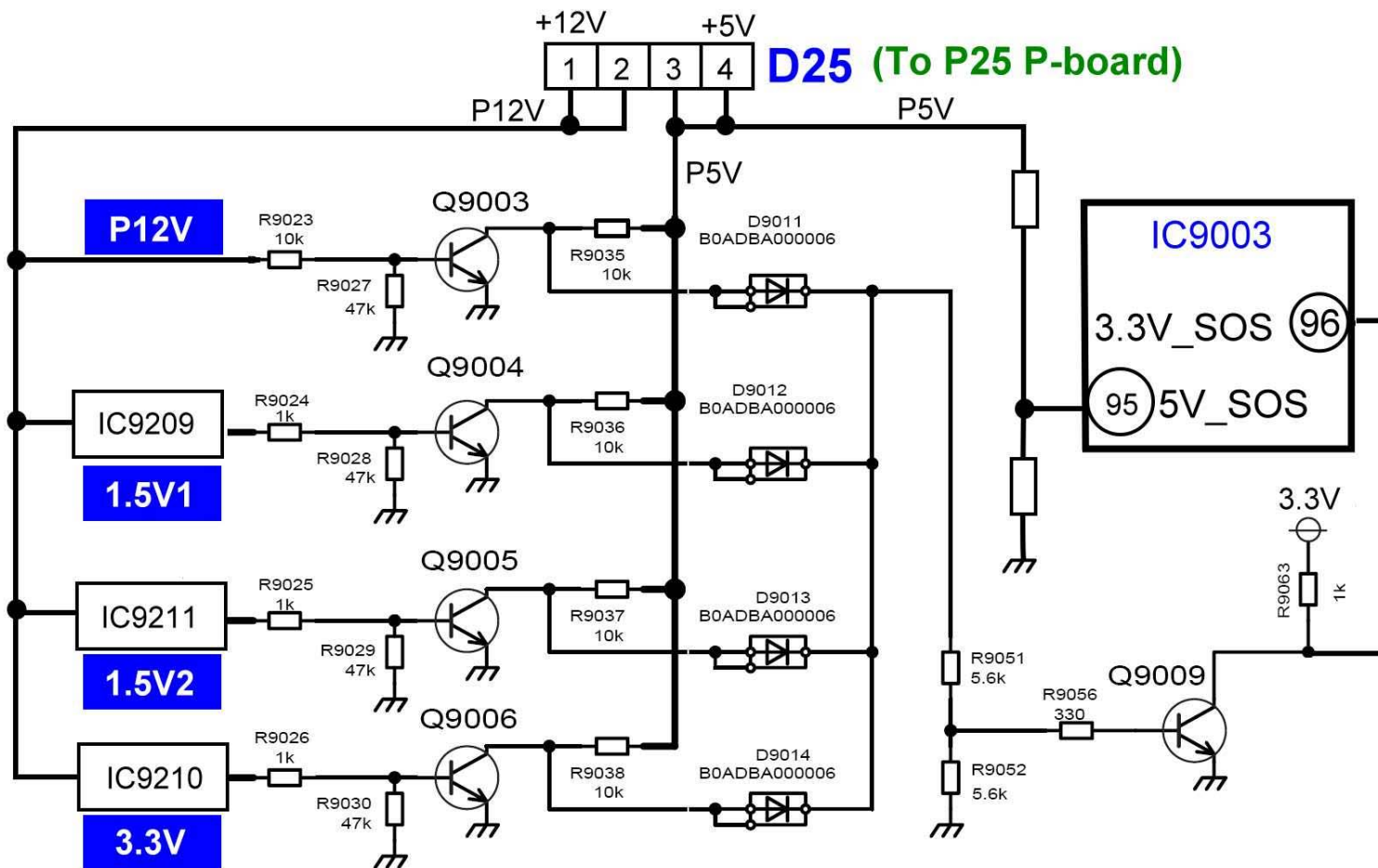


Figure 40 - 3.3V SOS and 5V SOS Detect Circuit (TH-42XVS30)

TH-42XVS30 SC and SS SOS Detect

The Scan and Sustain voltages on the SC and SS boards are monitored in a similar manner. The +15V Line on the SS board is fed to a voltage divider and the result is compared to a reference voltage. The reference voltage is provided by a zener diode. If the output of the comparator goes high, a transistor turns on, effectively grounding the SOS line. The SC board uses a similar circuit.

Additionally the SS and SC boards contain LED indicators to alert the technician when a problem exists. The LED should be lit during normal operation, a dark LED indicates that a problem exists on that board.

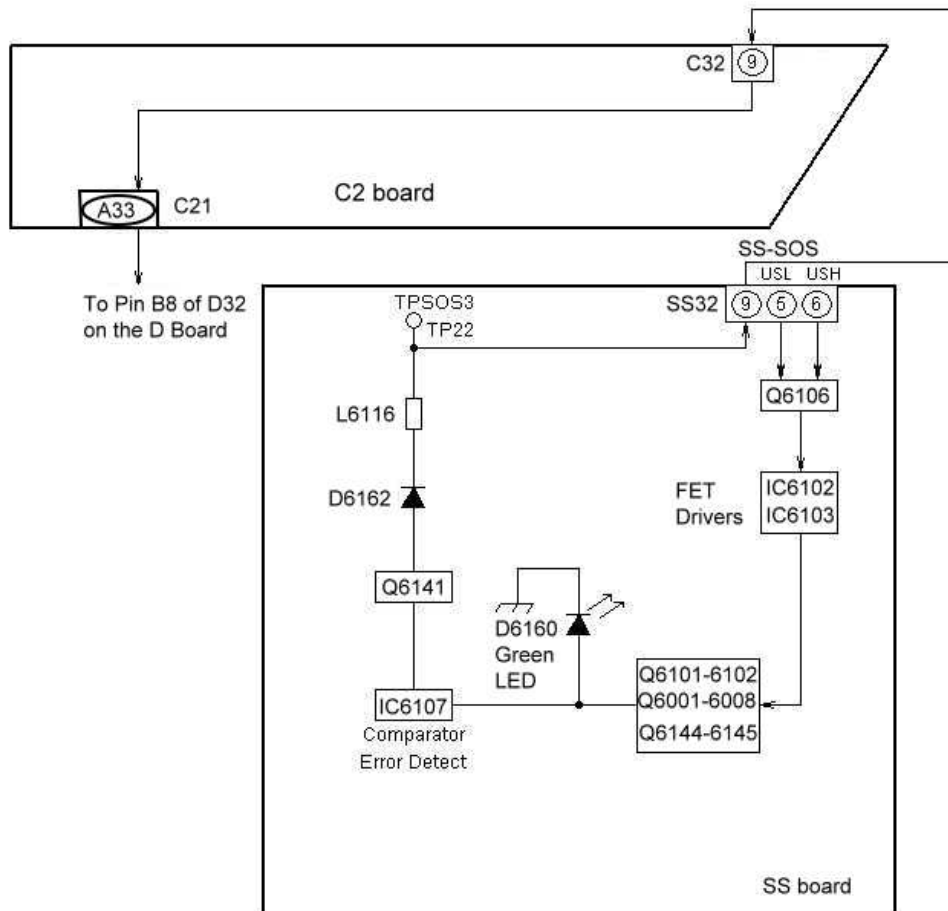


Figure 41 - SS SOS Detect Circuit (TH-42XVS30)

TH-42XVS30 Tuner SOS Detect

The SOS detect line from the tuner receiver comes into the TV through the tuner cable connected to the tuner-in connector on the DR board.

If there is short circuit on this line, Q8200 goes out of conduction providing a high on pin 10 of the expander I/O IC (IC3004) on the J board.

This change of voltage on pin 10 is reported to the main microprocessor IC (IC9003) on the D board through the SCL3 and the SDA3 bus line. The DC level shifter circuit, (Q9000 and Q9002) reduces the signal DC level to 3.3V to match the DC operational level of IC9003.

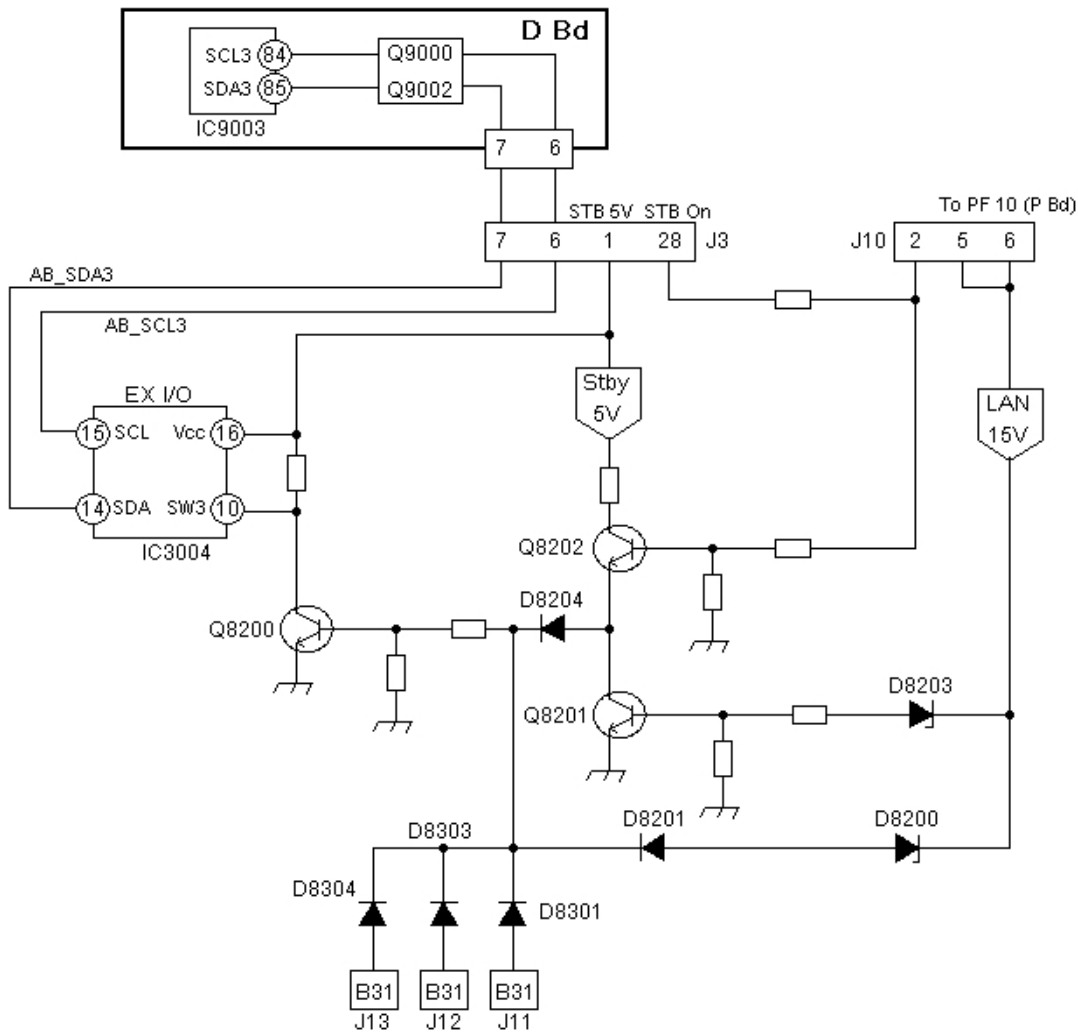


Figure 43 - Tuner SOS Detect

TH-42XVS30 Power SOS Detect

Pin 94 of the Microprocessor IC9003, monitors the Vsus, the DC12V and the 5V lines. A short circuit on any of these lines is detected by the transistors Q509, Q424, Q508, or Q511.

If there is a short circuit on the DC12V line or the 5V line, Q508 turns on grounding pin 20 of IC501, making pin 15 go high.

When pin 15 goes high, it turns off Q544 and a low condition is applied to pin 94 of the Microprocessor IC9003 on the D board

If there is a short or excessive load on the Vsus line, Q511 turns on, grounding pin 17 of IC501, thus making pin 15 go high.

When pin 15 goes high, it turns off Q544 and a low condition is applied to pin 94 of the Microprocessor IC9003 on the D board.

TH-42XVS30 Fan SOS Detect

The two ventilation fans are monitored to be sure that they are operating properly. If one of the fans opens or increases resistance, the resulting current change is applied to pin 89 of the Microprocessor IC9003.

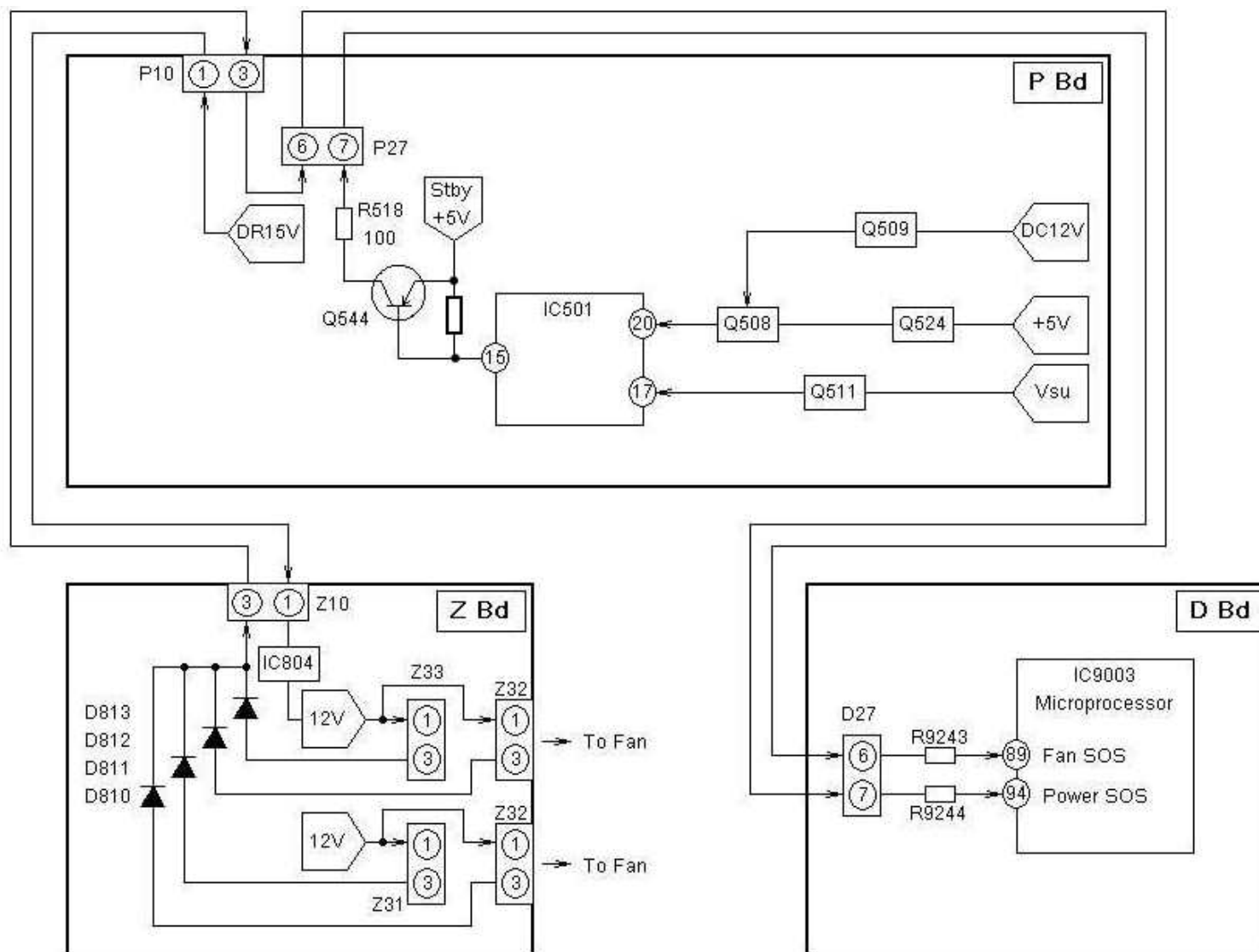


Figure 44 - Power SOS and Fan SOS Detect Circuit (TH-42XVS30)

TH-42XVS30

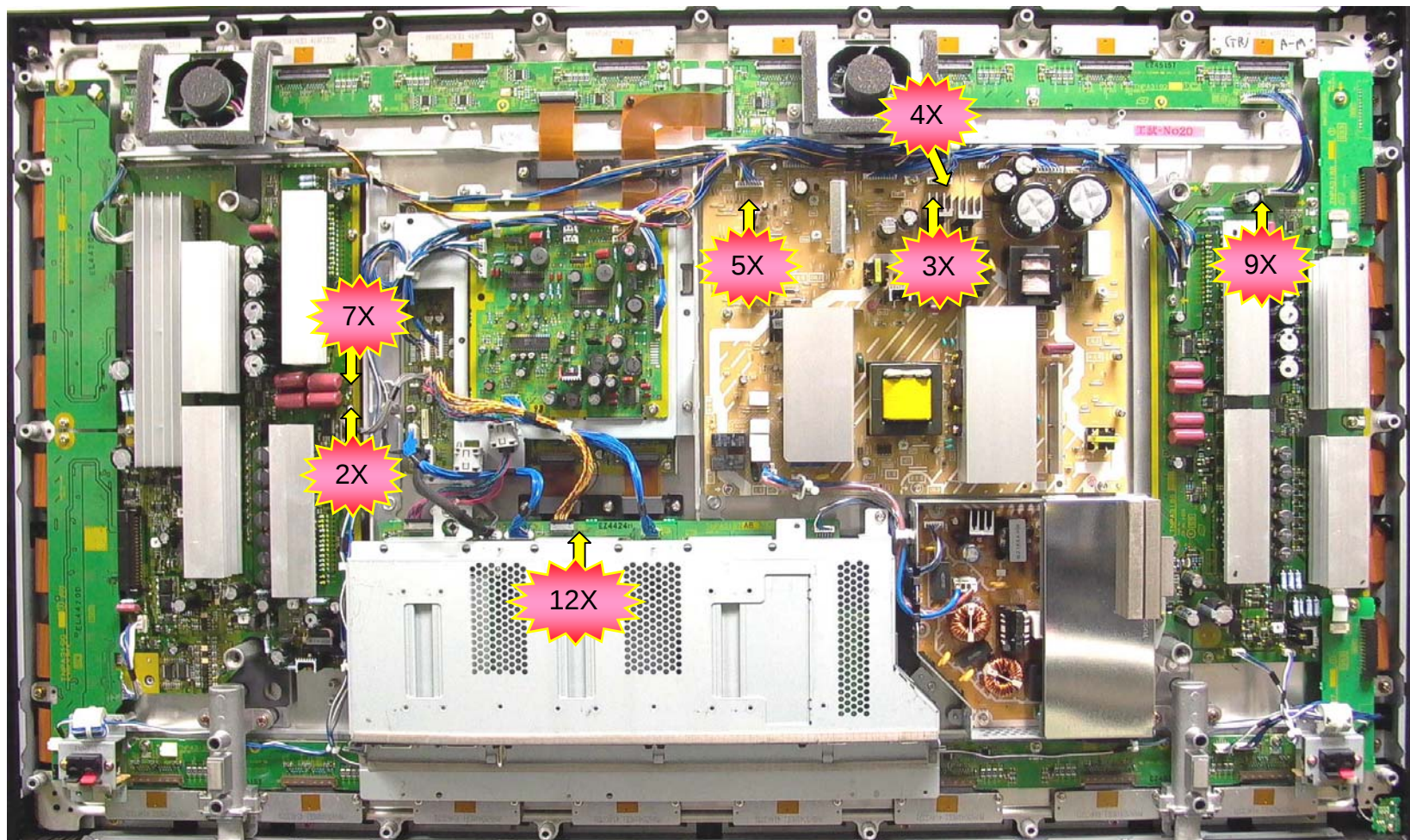
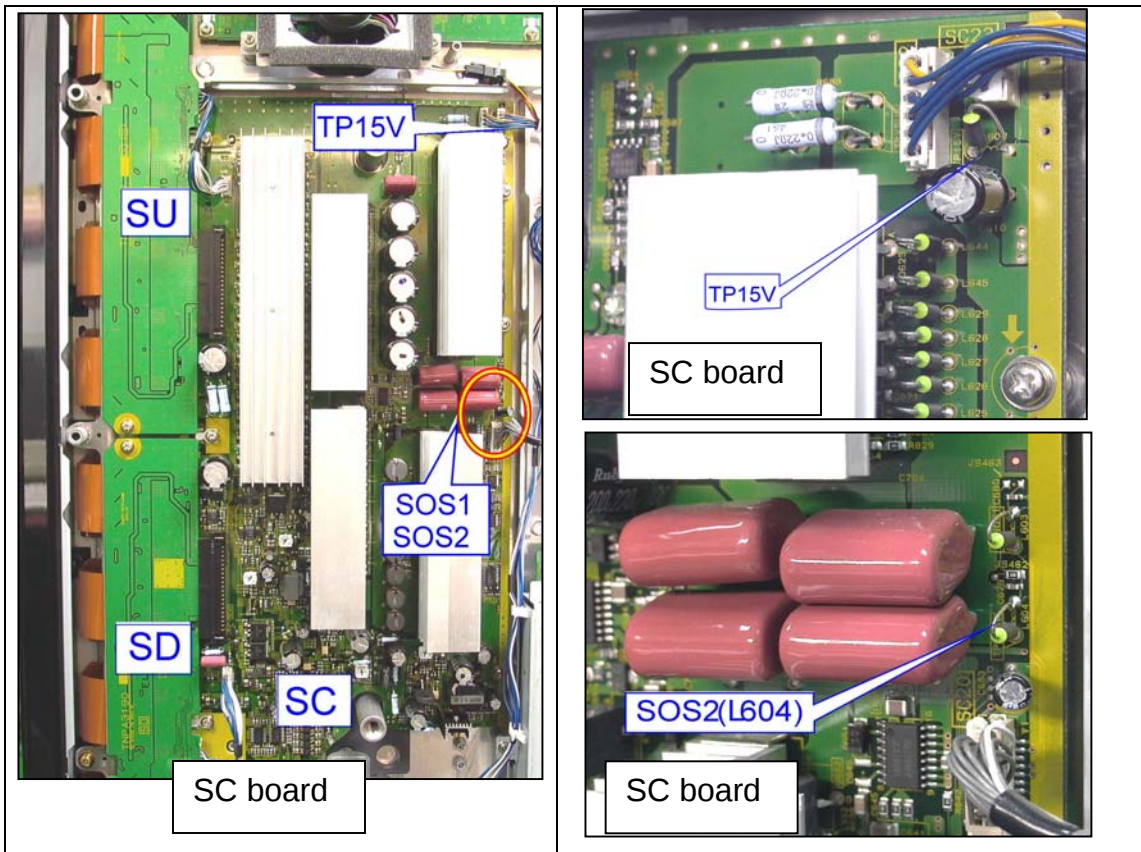
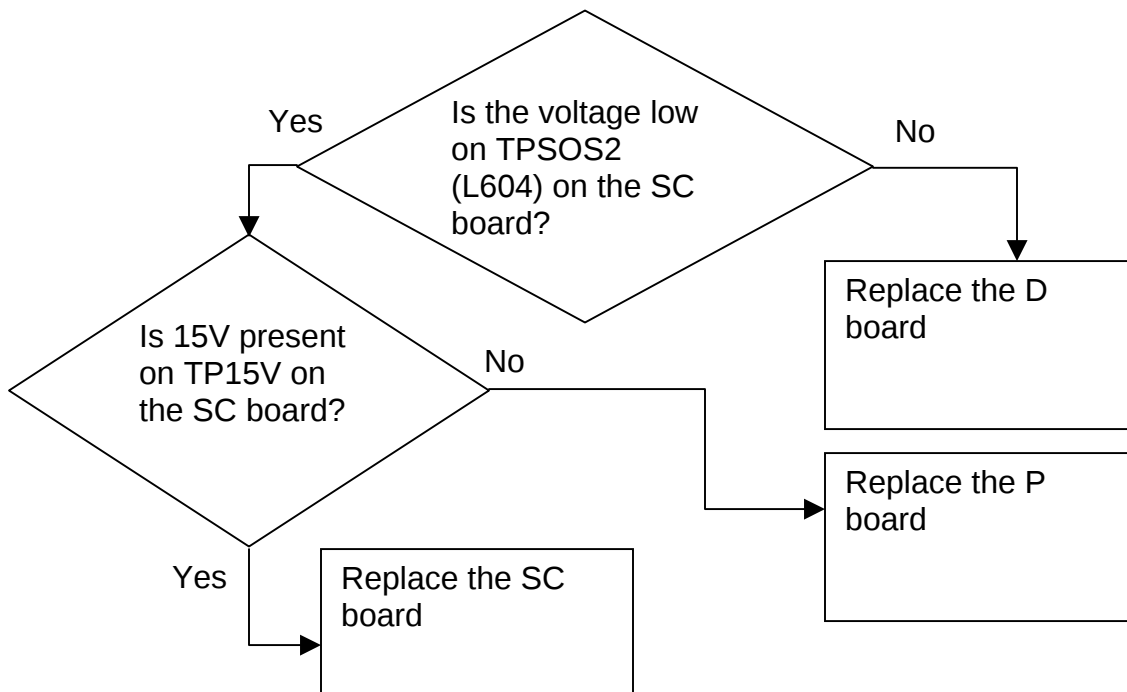


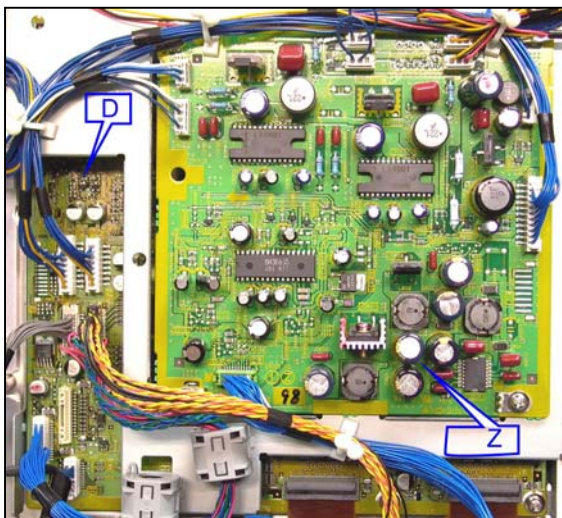
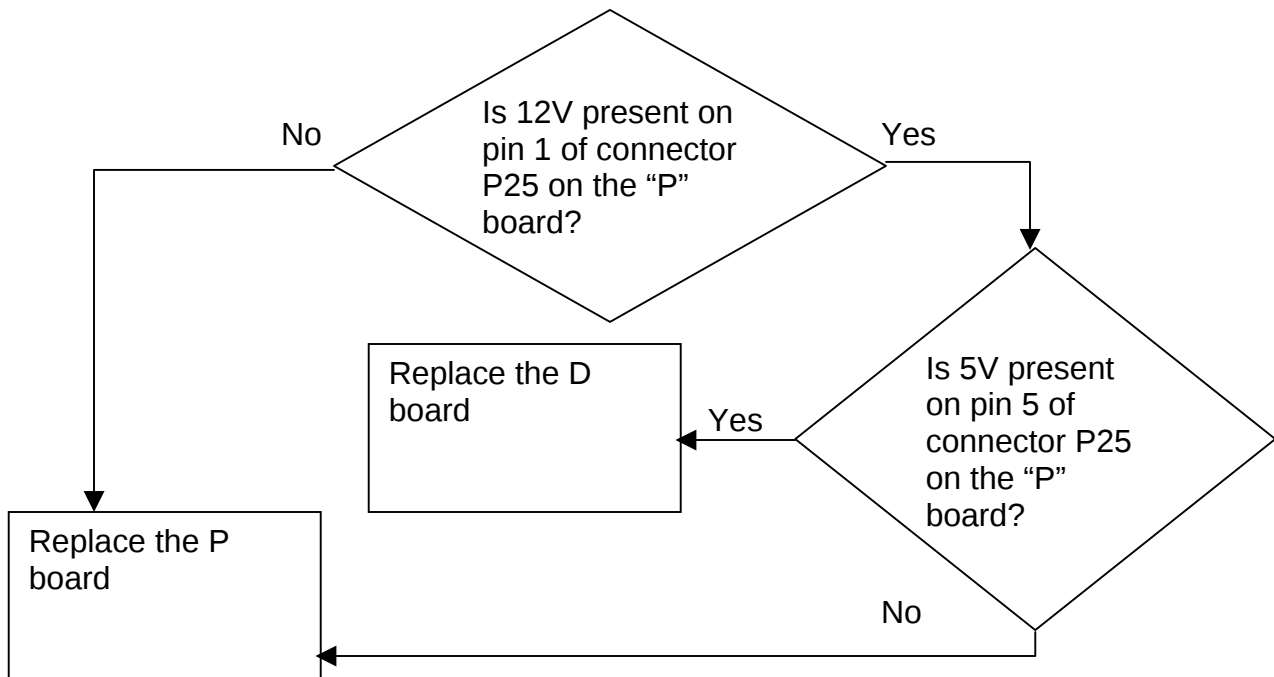
Figure 45

Troubleshooting chart for the TH-42XVS30

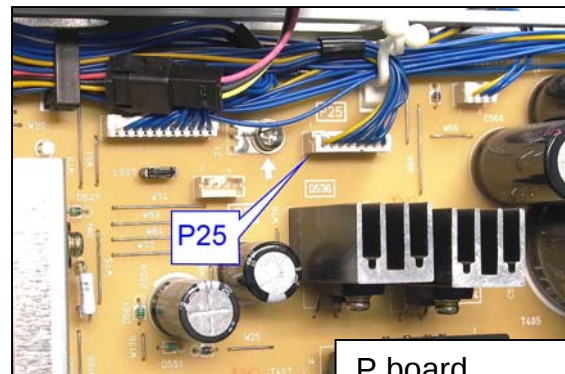
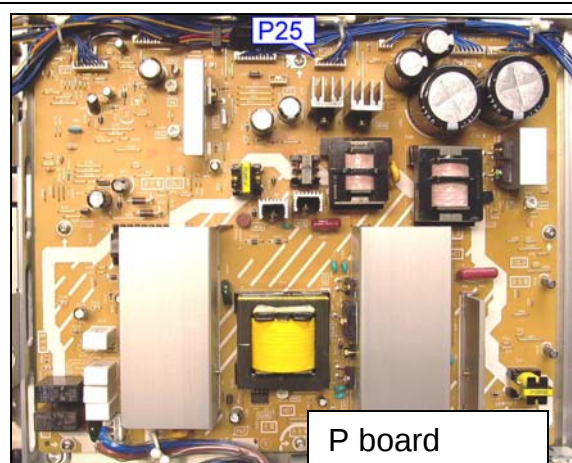
Power LED blinks 2 Times



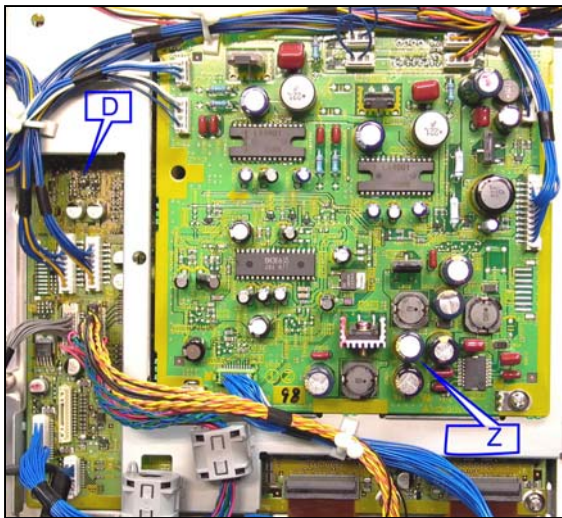
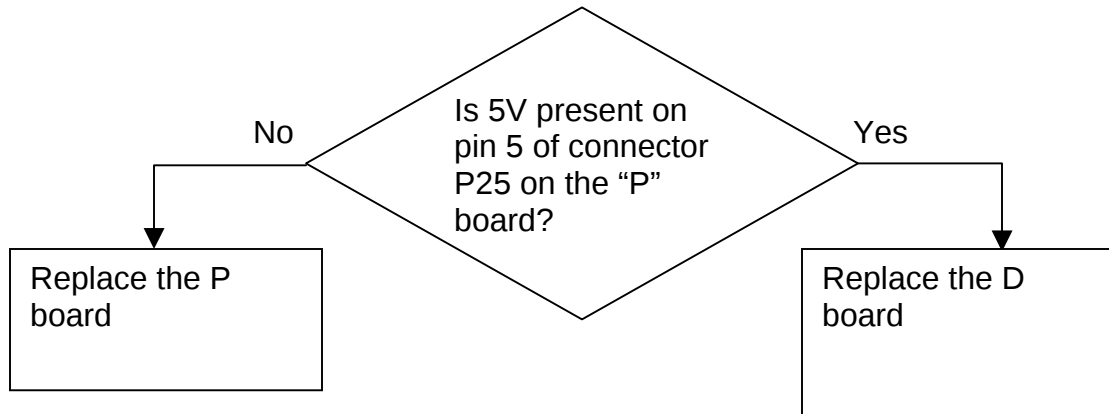
Power LED blinks 3 Times



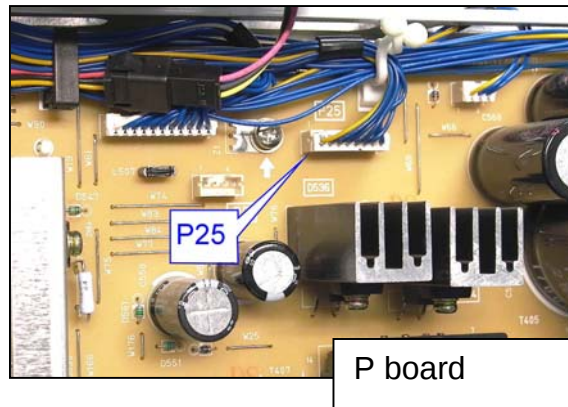
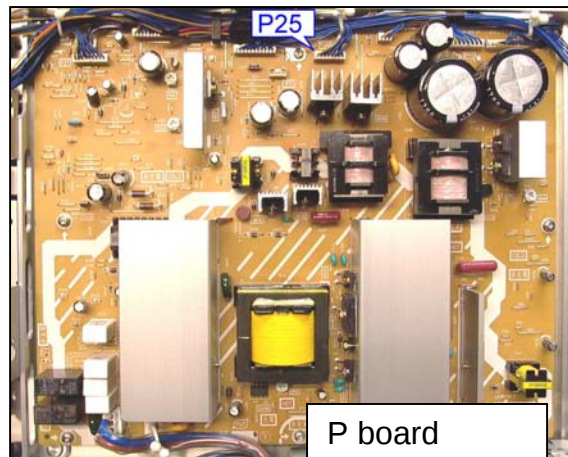
D and Z boards



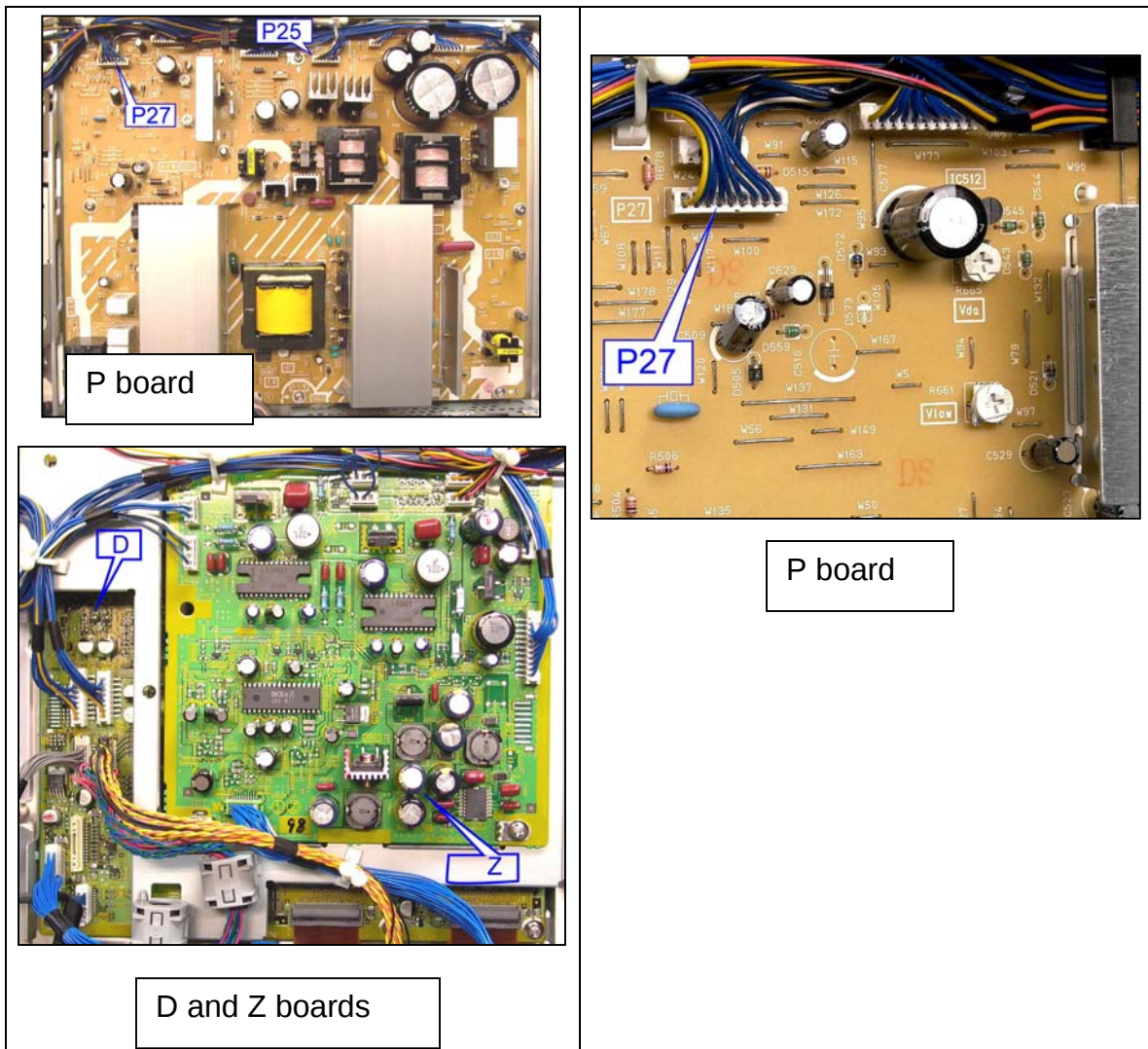
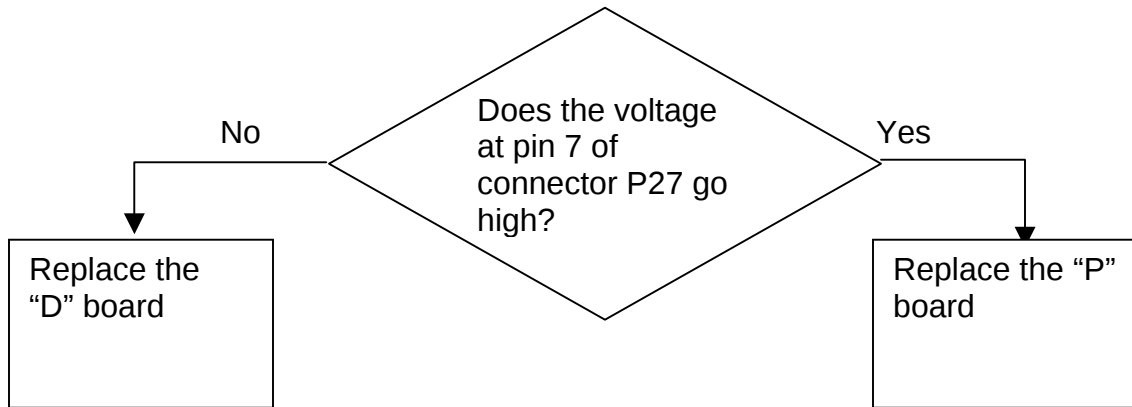
Power LED blinks 4 Times



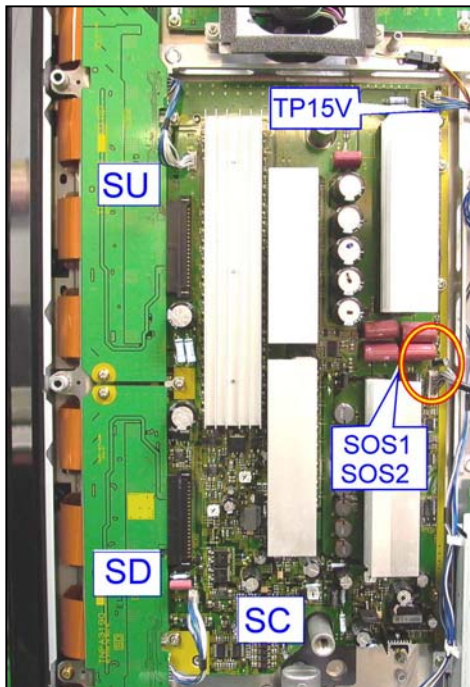
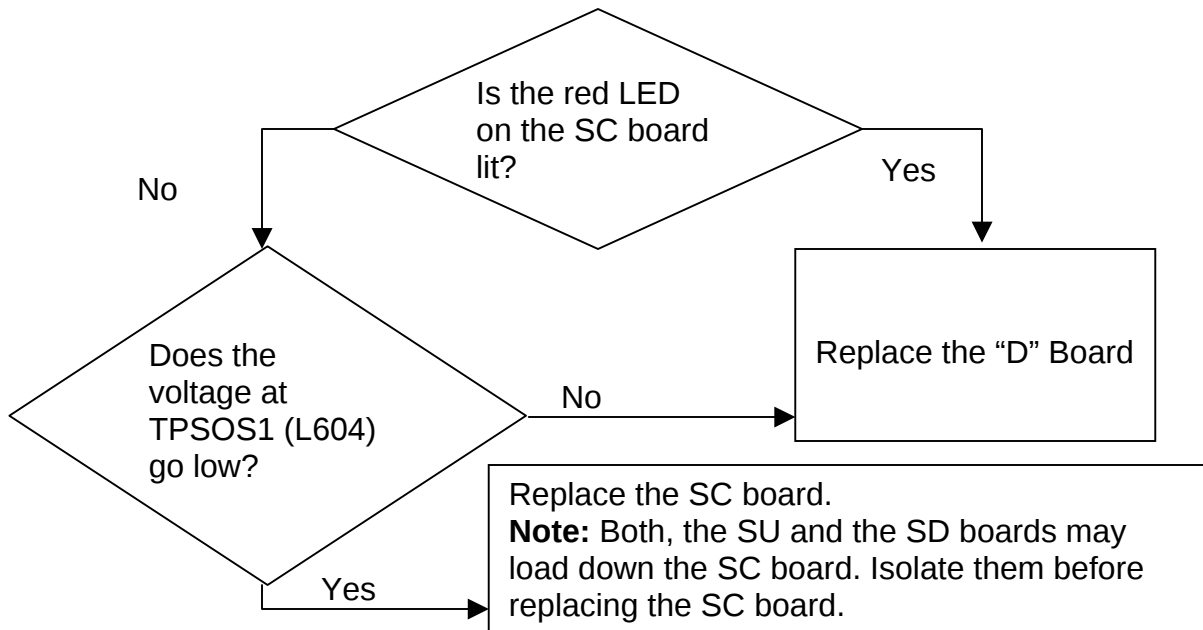
D and Z boards



Power LED blinks 5 Times



Power LED blinks 7 Times

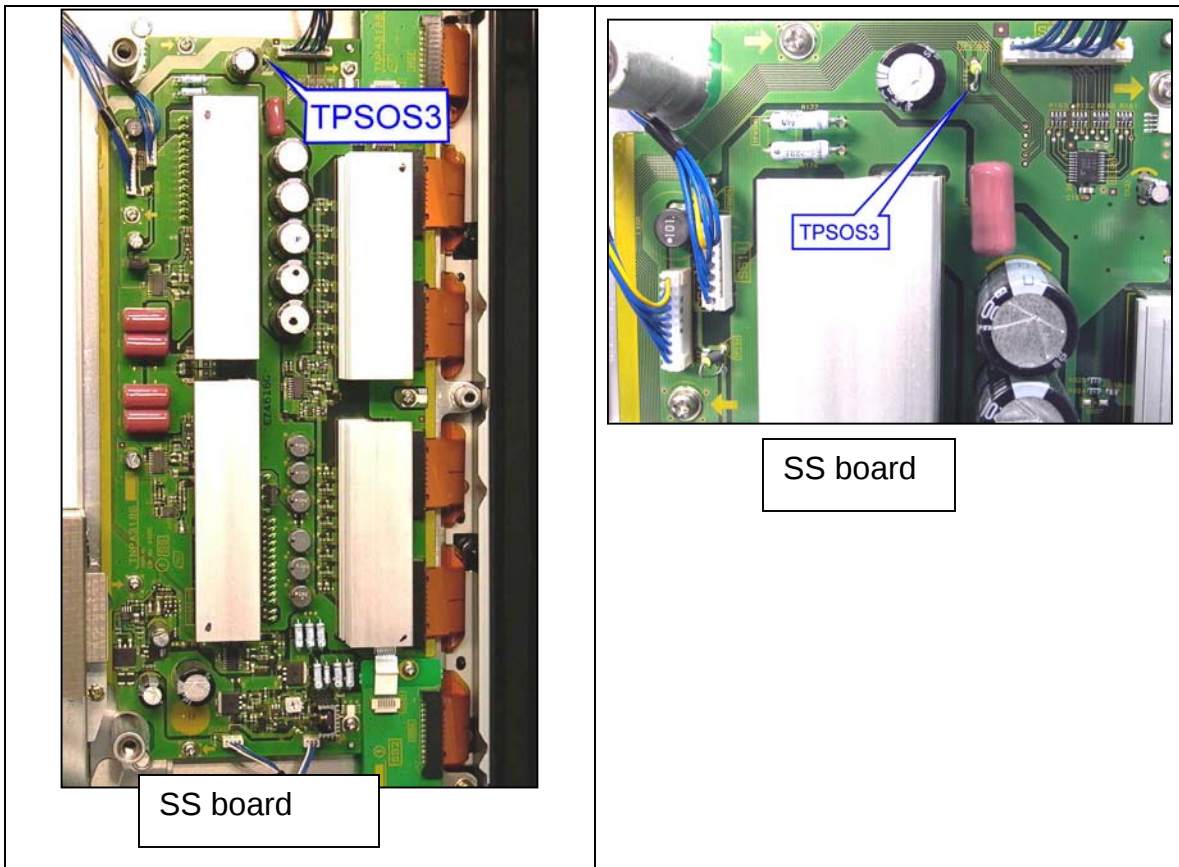
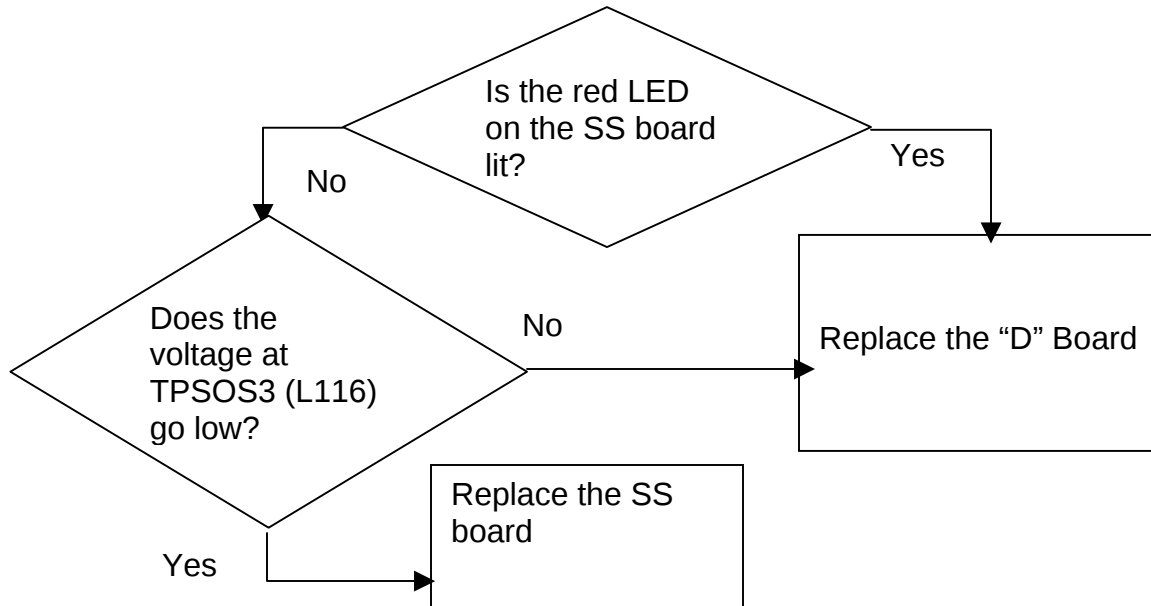


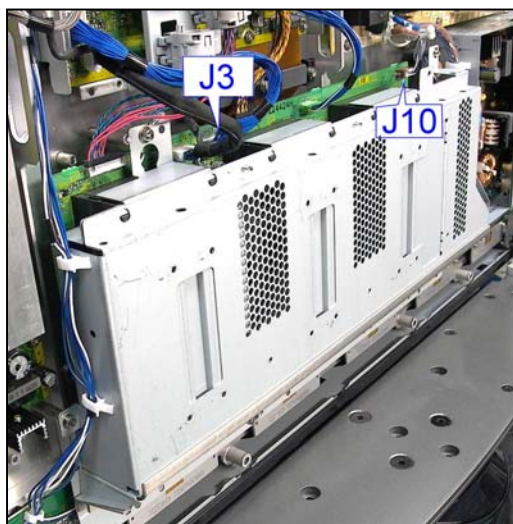
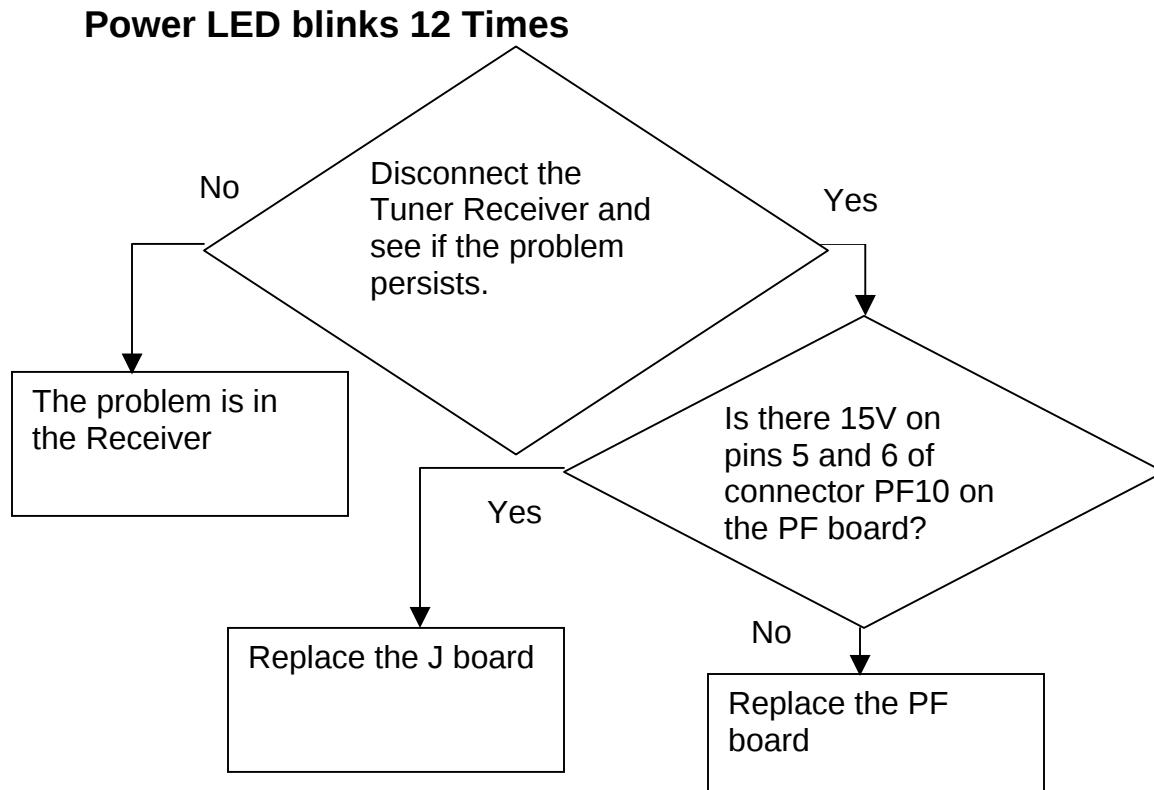
Check voltage at TPSOS1 using a peak-hold meter.



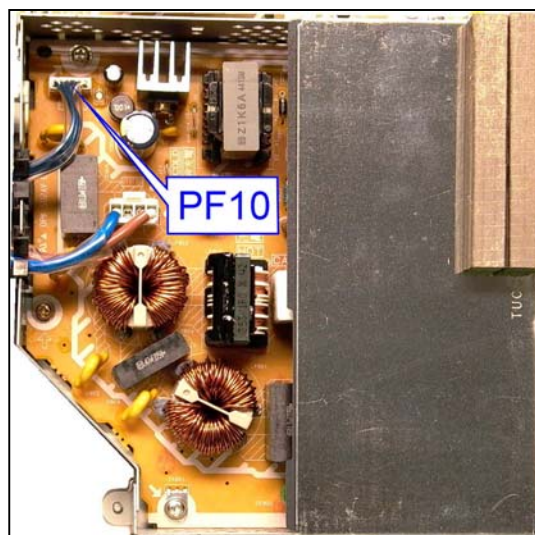
SC board

Power LED blinks 9 Times





J board



PF board

Service Notes

TH-37PA20U TH-42PA20U (Service Hint SH-B19-04-06)

If the DG board is defective, order a complete tuner block assembly (it contains DG board, H board, Tuners and wire harnesses Part #: TXAUX01QCSU), instead of just ordering the DG board.

The new replacement DG board has a larger 6-pin connector at DG18 and is incompatible with the original DG board, which had a small connector.

A running change to the DG board production was made. The size of the DG18 connector was changed and some software changes were made too. Because of these, a new replacement DG board is not compatible with the existing G18 wire harness and the interconnected H board software (To operate a new DG board software, a new matched H board is necessary).

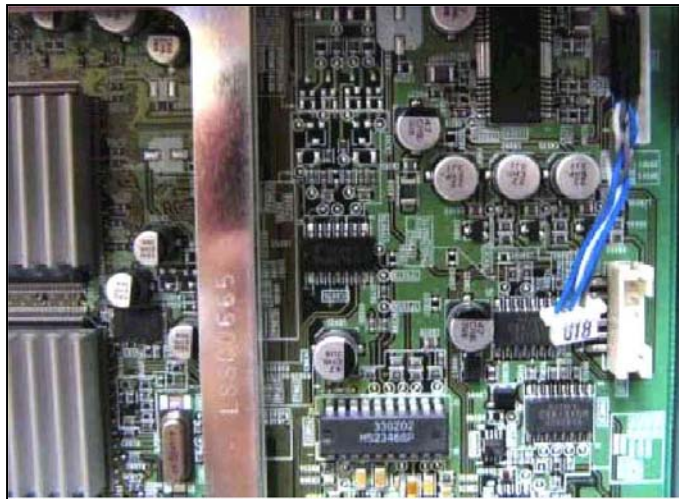


Figure 46 - Original G18 wire harness and the incompatible DG board with the larger connector DG18.

Order Part #: TXAUX01QCSU

Order and install a complete tuner block assembly (contains DG board, H board, Tuners and wire harnesses) whenever a DG board is defective and needs to be replaced.

After replacing the DG board, if some adjustments are necessary, refer to the service manual.

Note: Replacement of the new DG/Tuner block assembly requires Panasonic Hotline authorization.

Call **1-800-743-2335** for authorization. The defective (original) DG board (which was removed) must be returned for recycling and DUD value credit.

TH-37PA20U TH-42PA20U (Service Bulletin # SB-B19-04-01)

IC551 Failure

Due to internal defect of IC551, the unit could intermittently shut down or go into stand-by mode.

When this happens, the power LED blinks 5 or 7 times. Often times cycling the power off and on.

To correct this problem, replace IC551 with an improved IC as indicated on the Service Bulletin number **SB-B19-04-01**.

This modification applies to units with serial numbers less than or equal to YD3510432 regardless of the original complaint or symptom.

Order part number **C5HABZZ00123**.

Note: Units with serial numbers greater than YD3510433 already have an improved IC551 and are not affected.

Warranty Codes:

- Symptom Code: Use INTD for Intermittently dead units or DEAD depending on actual symptom.
- Repair Code: Use MODS when replacing IC551 to reference this bulletin.

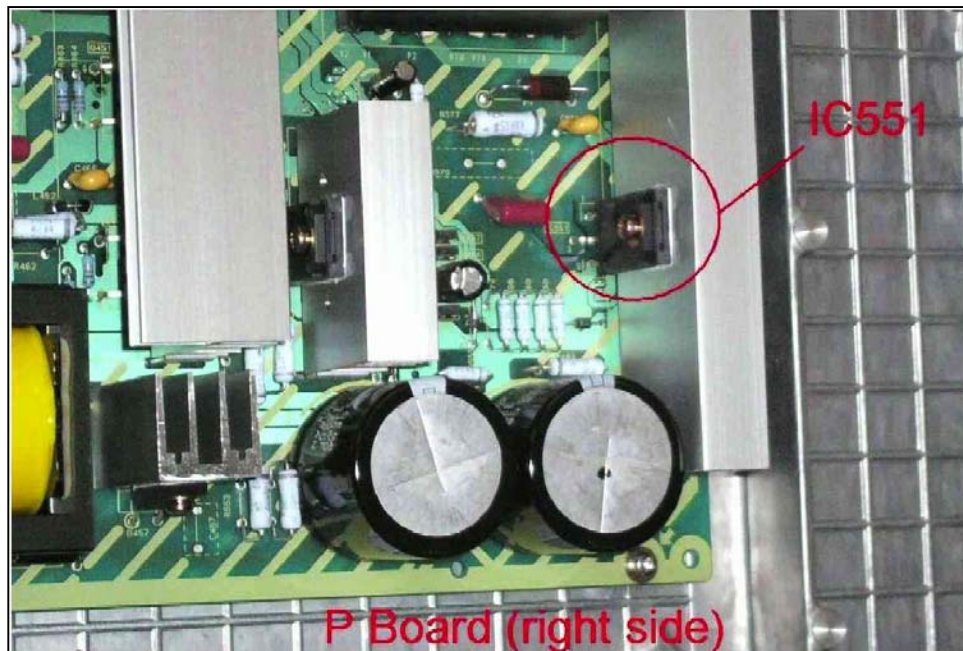


Figure 47 - IC551 location on the D board

TH-37PD25U, TH-37PX25U, TH-42PD25U, TH-42PX25U, and TH50PX25U

Heat Transfer Pads for Models Number: TH-37PD25U, TH-37PX25U, TH-42PD25U, TH-42PX25U, and TH50PX25U

When swapping boards in the Plasma Display Television models listed above, it is absolutely essential that the Heat Transfer Pads (Soft gray spongy material) be transferred to the replacement board.

These pads are mounted on certain ICs located on the boards. They are used as replacement for the traditional metal heat sinks used for heat dispersion.

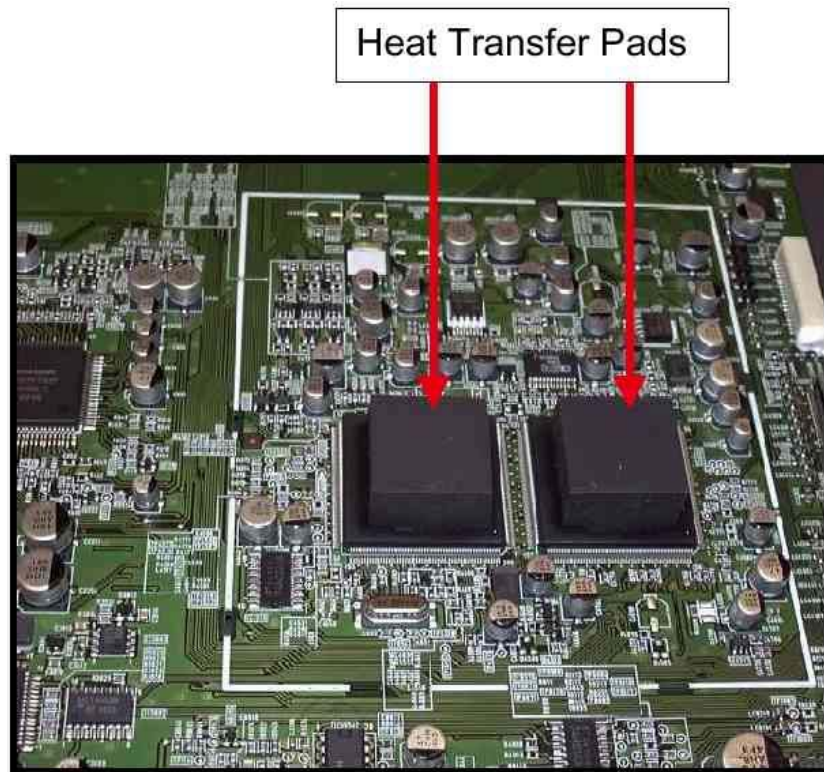


Figure 48 - Heat Transfer Pads Location

Corrupted EEPROM data in the 480i addressing area for Models Number: TH-37PD25U, TH-37PX25U, TH-42PD25U, TH-42PX25U, and TH-50PX25U (Service Bulletin SB-B19-04-12)

The following symptoms are caused by corrupted EEPROM data in the 480i addressing area.

1. Image appears split with a portion repeated on the right 1/3rd of the screen on 480i/tuner/composite sources only. Using 1080i HD sources, the picture is ok.
2. Image is shifted over to the left and the right 1/3rd of the screen has a black bar on 480i sources.
3. Image has a narrow black bar across the top edge of the screen in 480i only. 1080i HD is ok.
4. Image appears in a narrow band at the top edge of the screen. Bottom portion is all black. Switching aspect mode to Zoom Mode will display picture ok. 1080i HD is also ok.
5. Any loss of picture, distortion, or other symptom affecting only 480i display.



Figure 49 - Symptoms

In order to correct these problems, follow the instructions provided on the Service Bulletin # SB-B19-04-12.

EEPROM data copy jig. **Order Part # TNPX25JIG.**

The factory applied the updated EEPROM data to production units starting with serial number YB4550001.

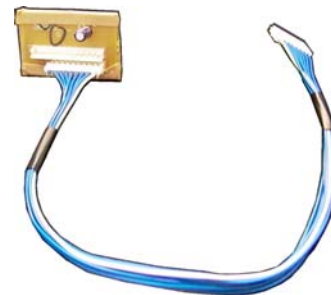


Figure 50 - Test Fixture

For all units requiring service, if the serial number is below **YB4550001, APPLY THIS EEPROM DATA UPDATE** regardless of the original failure or customer complaint.

If this EEPROM update does not resolve the listed symptoms, a replacement DG board may be needed.

Call Panasonic's Tech Support line at 1-800-743-2335 for assistance and/or a board authorization #.

TH-37PX25U, TH-42PX25U, TH-50PX25U

Remedy to reduce the rattle noise from speaker.

A small sponge is been used in order to minimize the noise from the woofer. These sponges are available through the Tech Support Hotline.

TH-42XVS30 (onyx)

Information about the speakers

When connecting the speakers to the TV, be sure to use only the optional accessory speakers.

There are no replacement parts available for the speakers at all.

If there are any problems with the speaker, whether it's cosmetic or functional in nature, order the complete replacement speaker accessory **part number, TY-SP42XV.**

Alignment Procedures

Pedestal Setting

Equipment required: RF Video Gray Scale Generator

Panel Settings; Picture = Normal, White Balance = Cool, Aspect Ratio = 16:9

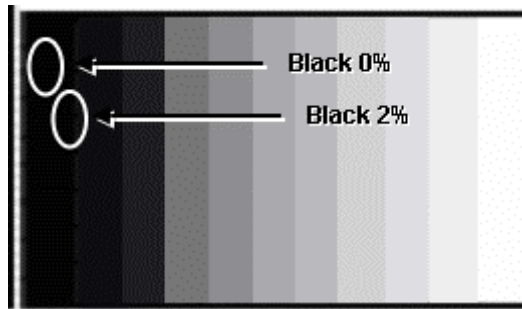


Figure 51 - Pattern Display

Step 1- Access the R, G and B cutoff settings and set them to "80".

Step 2- Under the Chroma Control setting, Set Gun off to "5" (Only green pixels emitting).

Step 3- Access the RGB Sub Adjust, G Sub Bright setting and adjust G Sub bright so that green pixel emission starts at black 2% area and no emission occurs in the black 0% area.

Step 4- Under the Chroma Control setting, Set Gun off to "3". (Only blue pixels emitting.)

Step 5- Access the RGB Sub Adjust, B Sub Bright setting and adjust B Sub bright so that blue pixel emission starts at black 2% area and no emission occurs in the black 0% area.

Step 6- Under the Chroma Control setting, Set Gun off to "6". (Only red pixels emitting.)

Step 7- Access the RGB Sub Adjust, R Sub Bright setting and adjust R Sub bright so that Red pixel emission starts at black 2% area and no emission occurs in the black 0% area.

Step 8- Change input to PC / RGB signal. Repeat procedure (1 to 7) using PC input signal.

NTSC White Balance Adjustment

Equipment required: NTSC Pattern Generator, Colorimeter

Panel Settings; Picture = Standard, Color Temperature = Cool, Aspect Ratio = 16:9

Step 1 - Using the Pattern generator; apply a 20 IRE Window pattern signal to the panel. Apply the color sensor to the panel and monitor the values.

Step 2 - Adjust the Sub Bright Setting to 10 cd/m².

Step 3 - Set the G Cutoff Setting Value to 80.

Step 4 - Adjust the Red and Blue Cutoff settings to match the values in Table 10.

Step 5 - Readjust the Sub Bright setting to 10 cd/m².

Step 6 - Apply an 80 IRE window pattern signal to the Panel.

Step 7 - Set the G Drive Setting value to E8.

Step 8 - Adjust the Red and Blue Drive settings to match the values in Table 10.

Step 9 - Reapply the 20 IRE pattern and 80 IRE patterns and verify that the drive and cutoff settings match the settings in Table 10. Adjust as necessary.

Step 10 - Adjust the All Drive Settings value to FC.

Step 11 - Reapply the 20 IRE pattern and verify the light settings to match with the table below, adjust as necessary.

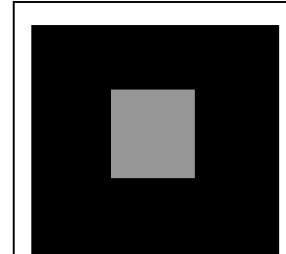


Figure 52 -
20 IRE Window
pattern

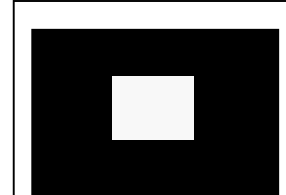


Figure 53 -
80 IRE Window
pattern

Reference Values

Color Temperature	X	Y
Cool (High)	0.276	0.276
Normal (Mid)	0.288	0.296
Warm (Low)	0.313	0.329

Table 10

Step 12 - Press the R button and then the Picture button on the remote control. Change the color temperature to Normal. Press the R button again, and then the Action button to re-access the IIC mode.

Step 13 - Repeat steps 2 to 11 for Normal Color Temperature.

Step 14 - Press the R button and then the Picture button on the remote control. Change the color temperature to Warm. Press the R button again, and then the Action button to re-access the IIC mode.

Step 15 - Repeat steps 2 to 11 for Warm Temperature.

Step 16 - Change the Color temperature to Cool Mode, then re-adjust the Sub bright value to "30".

HD Panel White Balance Adjustment

Equipment required: 720p/1080i Pattern Generator, Colorimeter
Panel Settings; Picture = Standard, Color Temperature = Cool, Aspect Ratio = 16:9

Step 1 - Using the Pattern generator; apply a 20 IRE Window pattern signal to the panel. Apply the color sensor to the panel and monitor the values.

Step 2 - Adjust the Sub Bright Setting to 10 cd/m².

Step 3 - Set the G Cutoff Setting Value to 80.

Step 4 - Adjust the Red and Blue Cutoff settings to match the values in Table 11.

Step 5 - Readjust the Sub Bright setting to 10 cd/m².

Step 6 - Apply an 80 IRE window pattern signal to the Panel.

Step 7 - Set the G Drive Setting value to E8.

Step 8 - Adjust the Red and Blue Drive settings to match the values in Table 11.

Step 9 - Reapply the 20 IRE pattern and 80 IRE patterns and verify that the drive and cutoff settings match the settings in Table 11. Adjust as necessary.

Step 10 - Adjust the All Drive Settings value to FC.

Step 11 - Reapply the 20 IRE pattern and verify the light settings to match with the table below, adjust as necessary.

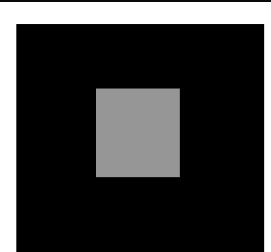


Figure 54 -
20 IRE Window
pattern

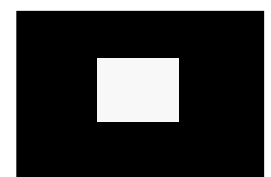


Figure 55 -
80 IRE Window
pattern

Reference Values

Color Temperature	X	Y
Cool (High)	0.276	0.276
Normal (Mid)	0.288	0.296
Warm (Low)	0.313	0.329

Table 11

Step 12 - Press the R button and then the Picture button on the remote control. Change the color temperature to Normal. Press the R button again, and then the Action button to re-access the IIC mode.

Step 13 - Repeat steps 2 to 11 for Normal Color Temperature.

Step 14 - Press the R button and then the Picture button on the remote control. Change the color temperature to Warm. Press the R button again, and then the Action button to re-access the IIC mode.

Step 15 - Repeat steps 2 to 11 for Warm Temperature.

Step 16 - Change the Color temperature to Cool Mode, then re-adjust the Sub bright value to "30".

Sub Brightness Setting

Equipment required: NTSC grayscale pattern Generator

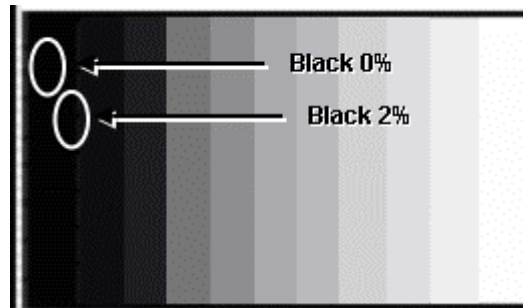


Figure 56 - Pattern Display

Panel Settings; Picture = Normal, Aspect Ratio = 16:9

Note: Adjust in a Dark room.

Step 1 - Set the white balance to Cool.

Step 2 - Access the All cutoff setting in service mode and adjust it so that pixel emission starts in the 2% area and there is no emission in the 0% area.

Step 3 - Write down all cut off data.

Step 4 - Set the white balance settings to Normal.

Step 5 - Adjust all the cut off values to the same data values of the Cool mode settings.

Step 6 - Set the white balance settings to Warm.

Step 7 - Adjust all the cut off values to the same data values of the Cool mode settings.

Step 8 - Change the pattern to HD and apply it to the to the component input.

Step 9 - Copy PAL all cutoff data to HD Mode.

Hotel Mode Operation

Hotel Mode restricts certain operation functions for use in hotels

Entry to Hotel Mode

1. Enter the Service Mode using the method described previously.

Note: Leave the set tuned to cable channel 124, changing the channel may inhibit access to the Hotel Mode EEPROM address.

2. Press the Power button on the remote control to display the service menu.



Figure 57 - Service Man Menu

3. Press and hold the MUTE button on the remote control for a few seconds. The display will change from the standard serviceman mode setting to the EEPROM address / data display.



EEPROM Address /
Data Display

4. Press the Channel Down button of the remote or receiver to select the EEPROM ADDRESS 1584.



5. Press the Volume Up button of the remote or receiver to set the data at EEPROM address to 01. Data 01 allows access to Hotel Mode, Data 00 inhibits access to and disables Hotel Mode.



6. Push the Power button of the receiver or the remote control to hide the Serviceman mode menu



7. Press and hold the Volume Down button of the receiver and press the TV/Video button of the remote control three times within two seconds to display the Hotel Setup menu.

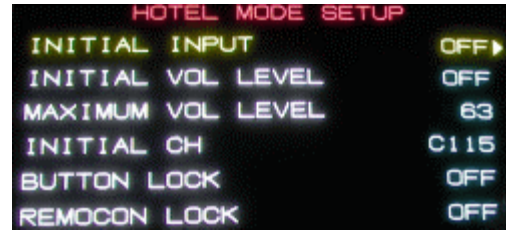


Figure 58

Hotel Mode Setup

Item	Function	Options
INITIAL INPUT	The receiver automatically selects this input each time power is switched on.	OFF /TV /COMP1 /COMP2 /DIGITAL /VIDEO1 /VIDEO2 /VIDEO3 /PC /JPEG Off: gives priority to the last input in memory.
INITIAL VOL LEVEL	The receiver automatically selects this volume level each time power is switched on.	<Selection/Range>: OFF / 0 to 63 OFF: gives priority to the last volume Level in memory at power off The Initial Volume can be changed when the unit is in the Hotel Mode. However, priority is given to the last volume level in memory when Initial Volume is Off. Note: When the Initial Vol. is larger than the Maximum Vol. make the Initial Vol. and Maximum Vol. the same value.
MAXIMUM VOL LEVEL	Limits the maximum Volume level	<Range>: 0 to 63 The receiver allows the user to adjust the volume level up to the Maximum Vol. selected. Note: When the Initial Vol. is larger than the Maximum Vol. make the Initial Vol. and Maximum Vol. the same value.
INITIAL CH	The receiver automatically selects this channel each time power is switched on.	<Selection>: OFF / 0 to 69 for TV mode and C0 to C125 for cable mode OFF: gives priority to the last CH in memory at power off
BUTTON LOCK	The receiver automatically disables the selected front panel buttons of the receiver each time power is switched on.	<Selection>: OFF / ACTION / ALL OFF: No button restriction ACTION: restricts ACTION Button selection ALL: inhibits all button operations
REMOCON LOCK	The receiver automatically disables the selected keys of the remote control each time power is switched on.	<Selection>: OFF / ACTION OFF: No Restrictions Action: Action Button on the remote is inhibited

Table 12

8. Push the Power button of the receiver or the remote control to hide the Serviceman mode menu

9. Press the Power button on the front panel to store the changes; the Hotel mode is now active.

Note: To return the unit to normal operation, use steps 1 through 5 to change the data at EEPROM address 1584 to 00, the Hotel mode is now disabled. All normal user functions are restored.

Service Contact Information

Panasonic Customer Call Center	1-800-211-7262
Tech Support Hotline	PTV and Digital Products 1-800-743-2335 (Authorized Service Centers only) All Other Products 1-800-572-2672 Authorized Service Centers only (access code required) Fax 1-800-348-7315 1-201-392-4207 Non-authorized (limited time access)
Other Numbers	1-800-833-9626 Parts Dept. 1-800-458-5397 Musical Instruments 1-201-392-4843 Telephone PBX Systems 1-800-414-4408 Cellular Phones 1-877-924-2473 Massage Loungers 1-201-392-4281 Commercial MWO/Hotel Televisions

Table 13